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TOXICITY OF INDUSTRIAL EFFLUENTS IN ONTARIO

January 1969 to
December 1980

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Ministry
of the
Environment

The Honourable
Keith C. Norton, Q.C.,
Minister

Graham W. S. Scott, Q.C.,
Deputy Minister

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1980

TOXICITY OF INDUSTRIAL EFFLUENTS

IN ONTARIO

JANUARY 1969 to DECEMBER 1980

Toxicity Unit Staff

Ontario Ministry of the Environment
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JANUARY 1969 - DECEMBER 1980

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PREFACE

"Chemical examination alone of a complex industrial waste does not provide sufficient information on their effects on the aquatic biota for the protection of the aquatic environment. Moreover, the toxicity of a complex mixture of wastes and chemicals cannot be determined by chemical means."⁽¹⁾

An organism exposed, under controlled conditions, to these mixtures will provide a summated biological response. Such an exposure is the static 96-hour bioassay.

This basic bioassay can answer a number of questions about a substance:

- "is it toxic?
- how toxic?
- does it vary in toxicity?
- what fraction of the waste is most toxic?
- is the available dilution sufficient to protect fish?
- how effective are treatment methods in reducing toxicity?" (2)

The fundamental elements of the basic, short-term bioassay consist of a series of containers holding dilutions of a toxicant, a container of dilution water, and time. An equal number of test animals (usually fish) are put into each container. The number of dead animals in each container is counted and removed at regular, pre-determined periods.

The unit of measurement of the short term bioassay is the median lethal concentration (LC-50). This value is the concentration which is lethal to 50% of the test animals. The LC-50 concentration always has a time qualification attached. Thus, a 96-hour LC-50 is a concentration of a toxicant that will kill half the test organisms in 96 hours. For example, the effluent from a fully bleached sulphate pulp mill might have a typical 96-hour LC-50 of 25% v/v. (A volume/volume dilution of the waste, 75% water/25% effluent will kill

half the test animals in 96 hours). It is important that the LC-50 not be confused with a "safe concentration" of a toxicant. Usually the safe concentration of a substance or effluent is obtained by multiplying the LC-50 value by an appropriate application factor. Generally, those substances or effluents which do not persist or do not bioaccumulate require less dilution (i.e. a numerically larger application factor) to be rendered harmless. Using ammonia as an example such an application factor would be $0.1 \times 96\text{-hour LC-50}$ or $0.1 \times 0.2 \text{ mg/L} = 0.02\text{mg/L}$.

Those substances or effluents which are more persistent or bioaccumulate will require much greater dilution (i.e. a numerically smaller application factor) to achieve a safe, no effect concentration in the environment. Such an application factor would be $0.01 \times 96\text{-hour LC-50}$. Substances in this category would be metals (zinc, mercury) and higher molecular weight chlorinated organics (PCB). The LC-50 itself, therefore, quantifies the potency of a waste (or lethality) and is valuable for comparison of processes, treatments or changes through time.

If an undiluted effluent kills less than half of the test animals in 96 hours then its LC-50 would be theoretically greater than 100% concentration. For practical purposes such an effluent is considered to be marginally lethal. To fully evaluate effluents of this type other bioassay methods involving chronic exposure and/or sub-lethal responses may be required.

More and more industrial and regulatory agencies are turning to the use of bioassays for monitoring and controlling discharges to the aquatic environment. The integrative nature of the test measures the lethality of all the toxicants present acting simultaneously.

National Standards of Effluent Control

The federal government has developed liquid effluent guidelines for a number of industrial sectors. These sectors are the chlor-alkali industry, the pulp and paper industry, the fish processing industry, the meat and poultry processing industry, the potato processing industry, the metal finishing industry and the

petroleum refining industry. Chlor-alkali plants, fish processing plants and metal finishing plants have no fish toxicity testing requirements. Legislation regulations for the remaining industries (pulp and paper, meat and poultry products, potato processing and petroleum refining) include minimum bioassay requirements for effluents.

These requirements are expressed in terms of regulations, guidelines and explanatory notes. The standards represent what the federal government expects of industries as a national minimum acceptable control level.

The regulation is a specific law that applies to all relevant situations. These regulations limit the amount of specific contaminants in effluents and define the frequency of monitoring and reporting.

A guideline is not a specific law. It is a statement indicating what practices will be considered by the Environmental Protection Service to be in compliance with the spirit of the law. Failure to comply with a guideline is not itself an offence; however, it may mean that the law itself (e.g. the general prohibition of deleterious discharges expressed in the Fisheries Act) is being violated.

The toxicity guidelines relate the acute lethality of an effluent to a species of fish and these requirements apply to every relevant plant whether new, expanded, or existing. Acute lethality tests involve exposing specified test organisms to samples of effluent under controlled conditions.

While the regulated industries must comply with the regulations from the day they came into force, the guidelines provide administrative flexibility needed to allow the regulatory agencies and the industries time to negotiate and implement a compliance schedule.

The guidelines are a series of notes and recommended best practices dealing with many of the technical aspects of effluent sampling, preparation of the bioassay sample, fish culture and bioassay management.

There are two basic types of bioassays to be run under these regulations and guidelines. The first test is a 24-hour static bioassay which, run monthly, is designed to inform the plant management of the general, overall efficiency of their effluent treatment system. The governing toxicity test is usually a 96-hour flow through test which is run by the Minister or his agent. The governing test is the one which will be used to establish the compliance of the effluent with the appropriate regulations and/or guidelines.

Metal Mining Liquid Effluent Regulations and Guidelines (3)

Guidelines for the Measurement of Acute Lethality in Liquid Effluents from Metal Mines.

Application

These guidelines apply to every Metal Mine except gold mines.

Objective - Governing Toxicity Test

For the purposes of these Guidelines the objective for each undiluted effluent deposited is that no more than 50% of the fish die in a composite sample within 96 hours when tested according to the procedure described as the Final Evaluation Test Procedure for Acute Lethality. This test is a 96-hour flow through bioassay.

Monitoring: Routine Toxicity Test

A Mine Operator should carry out an acute lethality test on a composite sample of each undiluted effluent deposited or have these tests carried out on his behalf in accordance with the test procedure described as Screening Test Procedure for Acute Lethality, every three months. This test is a 96-hour static bioassay.

Meat and Poultry Products Plant Liquid Effluent Regulations and Guidelines (4)

Application

The guidelines apply to every plant with facilities intended primarily for the slaughtering, dressing, processing or edible or inedible rendering of any meat or poultry products and associated livestock holding and receiving facilities and truck washing areas.

Objectives - Governing Toxicity Test

The effluent deposited by new, expanded or existing plant does not meet the objectives of these guidelines if more than 50% of the test fish die in a 96-hour flow through bioassay.

Monitoring - Routine Toxicity Test

The owner of a new, expanded or existing plant should conduct the acute lethality test on a composite sample as determined by the type and size of plant. The monitoring test is a 96-hour static bioassay.

Petroleum Refinery Effluent Regulations and Guidelines (5)

Application

These guidelines apply to all existing refineries.

Objective - Governing Toxicity Test

For the purpose of these Guidelines, refinery liquid effluent and one-through cooling water that is deposited is not acceptable if more than 50% of the fish die in the bioassay sample when tested according to the bioassay procedure. The governing toxicity test is to be a 96-hour flow-through bioassay.

Monitoring: Routine Toxicity Test

The owner of a refinery is requested to determine once a month or as requested by the Minister the acute toxicity of liquid effluent and once through cooling water being deposited by the refinery by carrying out 24-hour static bioassays. Compliance in this test is indicated by at least 50% survival rate of the fish in the bioassay sample.

Potato Processing Plant Liquid - Effluent Regulations and Guidelines (6)

Application

These guidelines apply to every potato processing plant.

Objective - Governing Toxicity Test

For the purpose of these guidelines the objective for each undiluted effluent deposited is that no more than 50% of the fish die in a composite sample within 96 hours when tested according to the Test Procedure for 96-hour Acute Lethality Continuous Flow Test.

Monitoring - Routine Toxicity Test

The owner of a plant should carry out an acute lethality test on a composite sample of each undiluted effluent deposited or have these tests carried out on his behalf, in accordance with the Test Procedure for 24-hour Acute Lethality Static Test. Compliance in this test is indicated by at least 50% survival rate of the fish in the bioassay sample.

Guidelines for the Pulp and Paper Effluent Regulations Promulgated Under the Fisheries Act. (7)

Application

These guidelines apply to all new, expanded, altered or existing mills.

Objective - Governing Toxicity Test

For the purpose of these guidelines the objective is for a mixture of 65% deposited effluent, 35% dilution water to permit at least 80% fish survival in a 96-hour flow through bioassay when tested according to the "Test for Determining Toxicity of Mill Effluent".

Monitoring - Routine Toxicity Test

Two monitoring bioassays are outlined for deposited effluents from the Pulp and Paper industry.

The first test is a 96-hour flow through test similar to the governing toxicity test but using fewer replications and fish. The second test can be either a 96-hour flow through bioassay or a 96-hour test with the test solutions renewed every 24 hours.

It is generally recommended that the first of the monitoring bioassays be run by the regulatory agency while the industry is encouraged to run the second test.

Provincial Standards of Effluent Control

Provincial or local governments may also impose more stringent standards than the federal requirements. The more stringent requirements will prevail.

The Ontario Water Resources Act; Chapter 332, Section 32(8) prohibits any municipality or person from discharging to water any substance that may impair water quality. Similarly, in the Ontario Environmental Protection Act Chapter 86, Section 14(9) no one may discharge anything to the natural environment that causes or is likely to cause injury or damage, to property, plant or animal life.

Under the Canada-Ontario accord, Ontario has agreed to establish and enforce effluent requirements at least as stringent as the agreed Federal baseline requirements. These requirements will apply immediately to all new or expanded production facilities and as rapidly as possible in all other cases.

The Toxicity Unit of the Water Resources Branch, Limnology and Toxicity Section, maintains facilities at the Rexdale laboratory to complete static and, depending on the logistics, flow through bioassay for the completion of these tests can be made by contacting the Toxicity Unit Laboratory at 416-248---3011.

Summary of Regulatory Bioassays

Industry	Bioassay	
	Monitoring Test	Governing Test
Metal Mining	96-hr Static	96-hr flow through
Meat & Poultry	96-hr Static	96-hr flow through
Petroleum Refinery	24-hr Static	96-hr flow through
Potato Processing	24-hr Static	96-hr flow through
Pulp and Paper	96-hr flow through*	96-hr flow through
	96-hr flow through**	
	or	
	96-hr Static, renewed**	

* test run by regulatory agency

** test run by industry

- 1) Standard Methods for the Examination of Water and Wastewater. 14th ed. 1975. Prepared and published jointly by: American Public Health Association, American Water Works Association, Water Pollution Control Federation.
- 2) The A.B.C.'s of Pollutant Bioassay Using Fish. John B. Sprague. Symposium on Environmental Monitoring, June, 1972. Annual Meeting of the American Society for Testing and Materials.

- 3) Metal Mining Liquid Effluent Regulations and Guidelines.
Fisheries and Environment Canada, Environmental Protection Service, Regulations Codes and Protocols. Report EPS 1-WP-77-1. Water Pollution Control Directorate, April 1977.
- 4) Meat and Poultry Products Plant Liquid Effluent Regulations and Guidelines. Fisheries and Environment Canada.
Environmental Protection Service, Regulations, Codes and Protocols Report E.P.S. 1-WP-77-2. Water Pollution Control Directorate, July, 1977.
- 5) Petroleum Refinery Effluent Regulations and Guidelines.
Environment Canada, Environmental Protection Service, Regulations and Codes and Protocols Report E.P.S. 1-WP-74-1. Water Pollution Control Directorate, January 1974.
- 6) Potato Processing Plant Liquid Effluent Regulations and Guidelines. Fisheries and Environment Canada,
Environmental Protection Service, Regulations Codes and Protocols Report E.P.S. 1-WP-77-4. Water Pollution Control Directorate, November, 1977.
- 7) Guidelines for the Pulp and Paper Effluent Regulations.
Environment Canada, Environmental Protection Service, Regulation Codes and Protocols Report E.P.S. 1-WP-77-2. Water Pollution Control Directorate, May, 1972.
- 8) The Ontario Water Resources Act. Revised Statutes of Ontario, 1970. Chapter 332. March 1977.
- 9) The Environmental Protection Act, 1971. Statutes of Ontario 1971. Chapter 86. October, 1976.

SECTION 1

INTRODUCTION

This record of waterborne industrial waste quality across the province has been compiled under one cover to provide a background for current effluent conditions. The data has been compiled from bioassay tests requested by regional staff, from January 1969 to December 1979. Chemical data, when available, was included. More detailed information would be held by the local regional office.

The review is designed to assist pollution abatement staff compare industrial waste quality through time and within similar industrial groups. This information will be updated at the end of each calendar year.

Locating Industrial Data

Information is separated into two sections.

1) Industry Description Sheets identify:

- company name
- location
- receiving water
- background history
- production output
- effluent flow rate
- chemistry
- comments

2) Bioassay Data Summary Sheets identify:

- company name
- location
- discharge
- test number
- sample date
- static 96 hour LC_{50} data
- continuous flow 96-hour LC_{50} data
- comments

Both sections list the industries alphabetically by name.

Indexes

All industries are listed in three indexes for easy cross reference.

- Index I - industries listed by region
 - Index II - industries listed by process type
 - Index III - industries ranked by lethality for each region
 - industries are ranked according to four categories of lethality from most lethal to non lethal
- | | |
|--------------------------|---|
| 96-hour LC ₅₀ | <10% v/v (most lethal)
>10% v/v 50% v/v
>50% v/v 100% v/v
>100% v/v (non lethal) |
|--------------------------|---|
- each industry was placed in the category of its most lethal effluent.

Application

This compendium is designed as a handbook for field use by industrial abatement officers, and to provide easy reference to similar processes for the province. New data may be entered by regional staff to update locale industrial profiles as it is generated.

Bioassay Sample Collection

Generally bioassay samples should be scheduled for testing by contacting the Toxicity Unit (416-248-3011) four weeks in advance. Allowance is made, however, for emergency situations such as spills and fish kills.

Contingency containers should be kept on hand by regional staff for emergency use. Five gallon (20 L) plastic containers will suffice provided they withstand handling during transport. Containers should be rinsed with sample, filled to capacity to exclude air, and kept cool (4°C) if possible. All containers should be labelled indicating company name, location, sample site, date and collection personnel.

A minimum of 20 gallons of sample are required for a regulatory 96-hour static LC_{50} test using rainbow trout. Smaller volume samples may be tested using other aquatic organisms but should be submitted only when larger volume collections are impossible or impractical. It must be emphasized, however, that small volume samples may produce logistic difficulties which would affect interpretation of the results.

Long-term industrial survey programs may be planned in advance with Toxicity Unit staff in order that major blocks of laboratory time are made available. Bioassay testing protocols can be designed to meet specific needs, as well as to identify and to evaluate the contribution of toxicants in industrial wastes. Recent programs have incorporated a task force approach involving regional staff, laboratory services analytical groups and the Toxicity Unit to provide a more comprehensive investigation.

Acknowledgements

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SECTION 2INDEX 1
Industries Identified by RegionCENTRAL REGION (C)

Alchem Chemical Co. Ltd.	Burlington
Ashland Oil Co. Ltd.	Mississauga
Borg-Warner	Coburg
British Petroleum (BP)	Bronte
Chemical Development of Canada Co. Ltd.	Longford Mills
Consolidated Bathurst	Whitby
Douglas Aircraft	Malton
Gulf Oil	Clarkson
Houdaille Plating Co. Ltd.	Oshawa
Kimberly-Clark	Huntsville
Lindsay S.T.P.	Lindsay
P. L. Robertson Co. Ltd	Milton
Shell Canada	Oakville
Skyway S.T.P.	Burlington
Union Carbide	Lindsay

SOUTHEASTERN REGION (SE)

Alexandria Municipal Discharge	Alexandria
Ault's Foods	Winchester
Bakelite Thermosets (formerly Union Carbide)	Belleville
Bell Northern Research	Ottawa
Canada Starch	Cardinal
Canadian Industries Ltd. (C.I.L.)	Cornwall
Canadian International Paper (C.I.P.)	Hawkesbury
Caravelle Carpets	Cornwall
Celanese	Cornwall
Celanese	Millhaven
Chromasco	Haley Station
Collie Woollen Mills	Appleton
Consolidated Textiles	Alexandria
Corby Distillery	Corbyville
Cornwall Chemicals	Cornwall
Cornwall Municipal Discharge	Cornwall
Courtaulds	Cornwall
Deloro Smelting and Refining	Deloro
Domtar Chemicals	Trenton
Domtar Fine Papers	Cornwall
Domtar Packaging	Trenton
Dow Badishe	Arnprior
Dupont	Kingston
Dupont	Maitland
Dussek Brothers	Belleville
E. B. Eddy Forest Products	Ottawa
Genstar	Brockville
Haley Industries	Haley Station
Hawkesbury Municipal Discharge	Hawkesbury
Iroquois Municipal Discharge	Iroquois
ITEA Textiles	Cornwall
Kraft Foods	Ingleside
Madawaska Mines	Bancroft
Nestle's Foods	Chesterville

Rohm and Haas
 Strathcona Paper
 Transparent Cellulose Film (T.C.F.)
 Trent Valley Paper
 Zephyr Textiles

Morrisburg
 Strathcona
 Cornwall
 Glen Miller
 Almonte

NORTHEASTERN REGION (NE)

Abitibi Price Inc.
 Abitibi Price Inc.
 Abitibi Price Inc.
 Abitibi Price Inc.
 Agnew Lake Mine
 Agnico Eagle
 Algoma Steel
 Beaver Charcoal
 Canadaka Mines
 Canadian Industries Ltd. (C.I.L.)
 Canadian Industries Ltd. (C.I.L.)
 Canadian Smelting and Refining
 Cobalt Camp
 Cochrane Enterprises
 Denison Mines
 Denison Mines
 Dome Mine
 Dupont
 E. B. Eddy Forest Products
 Falconbridge
 Falconbridge
 Falconbridge
 Inco
 Inco
 Inco
 Inco
 Kamkotia Mine
 Kanichee
 Kerr Addison Mine
 Lacours Lumber
 Pamour Mine
 Rio Algom
 Rio Algom
 Rio Algom
 Rio Algom
 Rio Algom
 Schumacher Mine
 Sherman Mine
 Spruce Falls Power & Paper Co.
 Teck Corporation
 Texasgulf
 Willroy Mine

Iroquois Falls
 Sault Ste Marie
 Smooth Rock Falls
 Sturgeon Falls
 Agnew Lake
 Glenn Lake
 Sault Ste Marie
 North Bay
 Elliot Lake
 Parry Sound
 Sudbury
 North Bay
 Farr Creek
 Cochrane
 Stanrock
 Denison Property
 Timmins
 North Bay
 Espanola
 Emery Creek
 Fecunis Creek
 Moose Lake
 Coniston
 Copper Cliff
 Nolin's Creek
 Levack
 Timmins
 Temagami
 Virginiatown
 Lakstock
 Timmins
 Crotch Lake
 Nordic Property
 Pronto Property
 Quirke Property
 Strike Lake
 Timmins
 North Bay
 Kapuskasing
 Cart Lake
 Porcupine R.
 Kirkland Lake

NORTHWESTERN REGION (NW)

Abitibi Price Inc.
 Abitibi Price Inc.
 Abitibi Provincial
 American Can of Canada

Fort William
 Thunder Bay
 Port Arthur
 Marathon

Boise-Cascade
 Boise-Cascade
 Bulore Mine
 Campbell-Red Lake
 Cochenour-Williams
 Dickenson Gold Mines
 Domtar Packaging
 Great Lakes
 Great Lakes Forest Products
 Inco
 Industrial Grain Products
 Kimberly-Clark of Canada
 Noranda Mines
 Northern Wood Preservers
 Reichbold Chemicals

Fort Frances
 Kenora
 Red Lake
 Red Lake
 Red Lake
 Balmer Lake
 Red Rock
 Dryden
 Thunder Bay
 Shebondowan
 Thunder Bay
 Terrace Bay
 Geco
 Thunder Bay
 Thunder Bay

SOUTHWESTERN REGION (SW)

Allied Chemicals
 B.A.S.F.
 Canadian Industries Ltd. (C.I.L.)
 Chrysler of Canada
 Dow Chemical
 Dupont of Canada
 Esso Chemical
 Ethyl Corporation
 Fiberglass of Canada
 Ford of Canada
 Ford of Canada
 Freedland Industries
 Holmes Insulation
 Imperial Oil (Refinery)
 Ingersoll STP
 Ladney Properties
 Luster Division, National Hardware
 Monsanto Co. Ltd.
 Petrosar
 Polysar
 Scott Road Dump
 Shell Canada
 Sun Oil
 Tricil
 Windsor Bumper Co.
 Windsor Chrome Plating

Amherstburg
 Wyandotte, Michigan
 Courtright
 Windsor
 Corunna
 Corunna
 Sarnia
 Corunna
 Sarnia
 St. Thomas
 Windsor
 Kingsville
 Sarnia
 Sarnia
 Ingersoll
 Sarnia
 Wallaceburg
 Sarnia
 Sarnia
 Sarnia
 Sarnia
 Corunna
 Corunna
 Corunna
 Windsor
 Windsor

WEST-CENTRAL REGION (WC)

Abitibi Provincial Paper
 Atlas Steel
 Beaver Woodfibre
 B. F. Goodrich
 Cyanamid
 Dofasco
 Domtar Construction

Thorold
 Welland
 Thorold
 Niagara
 Welland
 Hamilton
 Thorold

Domtar Fine Papers
 Elmira S.T.P.
 General Motors
 Hahn Brass
 Kimberly-Clark of Canada
 Ontario Paper
 Paris Municipal Treatment Plant
 Penman's Textiles
 Stelco
 Stelco
 Texaco
 Uniroyal

St. Catherines
 Elmira
 St. Catherines
 New Hamburg
 St. Catherines
 Thorold
 Paris
 Paris
 Hamilton
 Nanticoke
 Nanticoke
 Elmira

SECTION 3

INDEX II
Industry Grouping by Basic Process Type

Pulp and Paper

Abitibi Price Inc.	Fort Williams
Abitibi Price Inc.	Iroquois Falls
Abitibi Price Inc.	Sault Ste Marie
Abitibi Price Inc.	Smooth Rock Falls
Abitibi Price Inc.	Sturgeon Falls
Abitibi Price Inc.	Thunder Bay
Abitibi Provincial Paper	Port Arthur
Abitibi Provincial Paper	Thorold
American Can of Canada	Marathon
Beaver Wood Fiber Co. Ltd.	Thorold
Boise-Cascade	Fort Frances
Boise-Cascade	Kenora
Canadian International Paper Co. Ltd. (C.I.P.)	Hawkesbury
Domtar Construction	Thorold
Domtar Fine Papers	St. Catherines
Domtar Fine Papers Co. Ltd.	Cornwall
Domtar Packaging Co. Ltd.	Red Rock
Domtar Packaging Co. Ltd.	Trenton
E. B. Eddy Forest Products	Espanola
E. B. Eddy Forest Products	Ottawa
Great Lakes Paper Co. Ltd.	Dryden
Great Lakes Paper Co. Ltd.	Thunder Bay
Kimberly-Clark of Canada	Huntsville
Kimberly-Clark of Canada	St. Catherines
Kimberly-Clark of Canada	Terrace Bay
Ontario Paper Co. Ltd.	Thorold
Spruce Falls Power and Paper Co.	Kapuskasing
Strathcona Paper Co. Ltd.	Strathcona
Trent Valley Paperboards	Glen Miller

Basin Iron and Steel

Algoma Steel	Sault Ste Marie
Atlas Steel	Welland
Dofasco (Dominion Foundary and Steel)	Hamilton
Stelco (Steel Co. of Canada Ltd.)	Hamilton
Stelco	Nanticoke

Mining and Metallurgical

Agnew Lake Mine	Agnew Lake
Agnico Eagle	Glenn Lake
Bulore Mine	Red Lake
Campbell-Red Lake Mine	Red Lake
Canadaka Mines	Elliot Lake
Canadian Smelting and Refining	North Bay
Cobalt Camp	Farr Creek
Cochenour-Williams Mine	Red Lake
Deloro Smelting and Refining	Deloro
Denison Mines	Denison Property

Mining and Metallurgical (cont'd)

Denison Mines
 Dickenson Gold Mines
 Dome Mines
 Falconbridge
 Falconbridge
 Falconbridge
 Inco
 Inco
 Inco
 Inco
 Inco
 Kamkotia Mine
 Kanichee Mine
 Kerr Addison
 Noranda Mines
 Pamour Mine
 Rio Algom Mines
 Rio Algom Mines
 Rio Algom Mines
 Rio Algom Mines
 Rio Algom Mines
 Schumacher Mine
 Sherman Mine
 Teck Corp.
 Texasgulf Corp.
 Willroy Mine

Stanrock Property
 Balmer Lake
 Timmins
 Emery Creek
 Fecunis Creek
 Moose Lake
 Coniston
 Copper Cliff
 Levack
 Nolin's Creek
 Shebandowan
 Timmins
 Temagami
 Virginiatown
 Geco
 Timmins
 Crotch Lake
 Nordic Property
 Pronto Property
 Quirke Property
 Strike Lake
 Timmins
 North Bay
 Cart Lake
 Porcupine River
 Kirkland Lake

Food Processing

Ault's Foods
 Canada Starch
 Corby Distillery
 Industrial Grain Products
 Kraft Foods
 Nestle's Foods

Winchester
 Cardinal
 Corbyville
 Thunder Bay
 Ingleside
 Chesterville

Miscellaneous - Automotive

Chrysler of Canada
 Ford of Canada
 Ford of Canada
 General Motors

Windsor
 St. Thomas
 Windsor
 St. Catherines

- Electroplating

Chromasco
 Freedland Industries
 Hahn Brass
 Haley Industries
 Houdaille Plating Co. Ltd.
 Luster Division, National Hardware
 P. L. Robertson Co. Ltd.
 Windsor Bumper Co.
 Windsor Chrome Plating

Haley Station
 Kingsville
 New Hamburg
 Haley Station
 Oshawa
 Wallaceburg
 Milton
 Windsor
 Windsor

- Textiles

Caravell Carpets	Cornwall
Celanese	Cornwall
Celanese	Millhaven
Collie Woollen Mills	Appleton
Consolidated Textiles	Alexandria
Courtaulds	Cornwall
ITEA Textiles	Cornwall
Penman's Textiles	Paris
Transparent Cellulose Film (T.C.F.)	Cornwall
Zephyr Textiles	Almonte

- Service Industries

Alexandria Municipal Discharge	Alexandria
Cornwall Municipal Discharge	Cornwall
Dussek Brothers	Belleville
Elmira Municipal Discharge	Elmira
Hawkesbury Municipal Discharge	Hawkesbury
Ingersoll S.T.P.	Ingersoll
Iroquois Municipal Discharge	Iroquois
Lindsay S.T.P.	Lindsay
Paris S.T.P.	Paris
Skyway S.T.P.	Burlington
Tricil	Windsor

- Others

Bakelite Thermosets	Belleville
Beaver Charcoal	North Bay
Bell Northern Research	Ottawa
Cochrane Enterprises	Cochrane
Consolidated Bathurst	Whitby
Douglas Aircraft	Malton
Holmes Insulation	Sarnia
Ladney Properties	Sarnia
Lacours Lumber	Lakstock
Northern Wood Preservers	Thunder Bay
Scott Road Dump	Sarnia

Chemical Manufacturing (including organic compounds, inorganic compounds, petrochemicals, polymers, fertilizers and acids)

Alchem Chemical Co. Ltd.	Burlington
Allied Chemical Co. Ltd.	Amherstburg
Ashland Oil	Mississauga
B.A.S.F.	Wyandotte, Michigan
B. F. Goodrich	Niagara
Borg-Warner	Coburg
British Petroleum (BP)	Bronte
Canadian Industries Ltd. (C.I.L.)	Cornwall
Canadian Industries Ltd. (C.I.L.)	Corunna
Canadian Industries Ltd. (C.I.L.)	Parry Sound
Canadian Industries Ltd. (C.I.L.)	Sudbury

Chemical Manufacturing (cont'd)

Chemical Developments of Canada	Longford Mills
Cornwall Chemicals	Cornwall
Cyanamid of Canada	Welland
Domtar Chemicals	Trenton
Dow Badische	Arnprior
Dow Chemicals	Sarnia
Dupont of Canada	Corunna
Dupont of Canada	Kingston
Dupont of Canada	Maitland
Dupont of Canada	North Bay
Ethyl Corp.	Corunna
Fiberglass of Canada	Sarnia
Genstar	Brockville
Gulf Oil	Clarkson
Imperial Oil (Petrochemical)	Sarnia
Imperial Oil (Refinery)	Sarnia
Monsanto Co. Ltd.	Sarnia
Petrosar	Sarnia
Polysar Corp.	Sarnia
Reichbold Chemicals	Thunder Bay
Rohm and Haas	Morrisburg
Shell Canada	Corunna
Shell Canada	Oakville
Sun Oil	Corunna
Texaco	Nanticoke
Union Carbide	Lindsay
Uniroyal Co. Ltd.	Elmira

SECTION 4

INDEX III

Regional Industries Identified by their most Toxic Final Discharge
(most recent representative sample)

CENTRAL REGION (C)

96 hour LC50 10% v/v

Chemical Development of Canada
Consolidated Bathurst
Houdaille Plating
Ashland Oil

Longford Mills
Whitby
Oshawa
Mississauga

96 hour LC50 10% v/v 50% v/v

Borg-Warner
Union Carbide

Coburg
Lindsay

96 hour LC50 100% v/v

Alchem Co.
British Petroleum (BP)
Douglas Aircraft
Gulf Oil
Kimberly-Clark
P. L. Robertson Co. Ltd.
Shell Canada
Skyway S.T.P.

Burlington
Bronte
Malton
Clarkson
Huntsville
Milton
Oakville
Burlington

NORTHEASTERN REGION (NE)

96 hour LC50 10% v/v

Abitibi Price Inc.
Abitibi Price Inc.
Algoma Steel
Beaver Charcoal
Cochrane Enterprises
Dome Mine
E. B. Eddy
Inco
Kamkotia Mine
Rio Algom

Smooth Rock Falls
Sturgeon Falls
Sault Ste Marie
North Bay
Cochrane
Timmins
Espanola
Nolin's Creek
Timmins
Crotch Lake

96 hour LC50 10% v/v 50% v/v

Abitibi Price Inc.
Abitibi Price Inc.
Canadian Industries Ltd. (C.I.L.)
Denison Mines
Falconbridge
Inco
Kerr Addison
Pamour Mine
Rio Algom Mines
Schumacher Mine
Sherman Mine
Spruce Falls Power and Paper Co.

Sault Ste Marie
Iroquois Falls
Sudbury
Stanrock
Fecunis Lake
Copper Cliff
Virginiatown
Timmins
Strike Lake
Timmins
North Bay
Kapuskasing

NORTHEASTERN REGION (NE) (cont'd)96 hour LC50 50% v/v 100% v/v

Canadian Industries Ltd. (C.I.L.)
 Dension Mines
 Lacours Lumber

Parry Sound
 Denison Property
 Lakestock

96 hour LC50 100% v/v

Agnew Lake Mine
 Agnico Eagle
 Canadaka Mines
 Canadian Smelting & Refining
 Cobalt Camp
 Dupont
 Falconbridge
 Falconbridge
 Inco
 Inco
 Kanichie Mine
 Rio Algom Mines
 Rio Algom Mines
 Rio Algom Mines
 Teck Corporation
 Texasgulf
 Willroy Mine

Agnew Lake
 Glenn Lake
 Elliot Lake
 North Bay
 Farr Creek
 North Bay
 Emery Creek
 Moose Lake
 Coniston
 Levack
 Temagami
 Nordic Property
 Pronto Property
 Quirke Property
 Cart Lake
 Porcupine River
 Kirkland Lake

NORTHWESTERN REGION (NW)96 hour LC50 10% v/v

Abitibi Price Inc.
 Boise-Cascade
 Campbell-Red Lake Mine
 Industrial Grain Products
 Noranda Mines

Fort William
 Fort Frances
 Red Lake
 Thunder Bay
 Geco

96 hour LC50 10% v/v 50% v/v

Abitibi Price Inc.
 Boise-Cascade
 Reichbold Chemicals
 Domtar Packaging
 Great Lakes Paper Co.
 Kimberly-Clark
 Great Lakes

Thunder Bay
 Kenora
 Thunder Bay
 Red Rock
 Thunder Bay
 Terrace Bay
 Dryden

96 hour LC50 50% v/v 100% v/v

American Can of Canada

Marathon

96 hour LC50 100% v/v

Abitibi Provincial Paper
 Bulore Mine
 Cochenour-Williams Mine
 Inco
 Northern Wood Preservers

Thunder Bay
 Red Lake
 Red Lake
 Shebandowan
 Thunder Bay

SOUTHEASTERN REGION (SE)96 hour LC50 10% v/v

Consolidated Textiles
 Courtaulds
 Domtar Packaging
 Genstar
 Transparent Cellulose Film (T.C.F.)

Alexandria
 Cornwall
 Trenton
 Brockville
 Cornwall

96 hour LC50 10% v/v 50% v/v

Aults Foods
 Canadian International Paper (C.I.P.)
 Chromasco
 Collie Woolen Mills
 Dussek Brothers
 Haley Industries
 Iroquois Municipal Discharge
 ITEA Textiles
 Strathcona Paper
 Zephyr Textiles

Winchester
 Hawkesbury
 Haley Station
 Appleton
 Belleville
 Haley Station
 Iroquois
 Cornwall
 Strathcona
 Almonte

96 hour LC50 50% v/v 100% v/v

Canadian Industries Ltd. (C.I.L.)
 Cornwall Municipal Discharge
 Deloro Smelting and Refining
 Domtar Fine Papers
 Dupont
 E. B. Eddy Forest Products
 Hawkesbury Municipal Discharge
 Trent Valley

Cornwall
 Cornwall
 Deloro
 Cornwall
 Maitland
 Ottawa
 Hawkesbury
 Glen Miller

96 hour LC50 100% v/v

Alexandria Municipal Discharge
 Bakelite Thermosets
 Bell Northern Research
 Canada Starch
 Caravell Carpets
 Celanese
 Celanese
 Corby's Distillery
 Cornwall Chemicals
 Domtar Chemicals
 Dow Badishe
 Dupont
 Kraft Foods
 Madawaska Mines
 Nestles
 Rohm and Haas

Alexandria
 Belleville
 Ottawa
 Cardinal
 Cornwall
 Cornwall
 Millhaven
 Corbyville
 Cornwall
 Trenton
 Arnprior
 Kingston
 Ingleside
 Bancroft
 Chesterville
 Morrisburg

SOUTHWESTERN REGION (SW)96 hour LC50 10% v/v

Dow Chemicals
Monsanto

Corunna
Sarnia

96 hour LC50 10% v/v 50% v/v

Allied Chemicals
B.A.S.F.
Tricil

Amherstburg
Wyandotte, Michigan
Sarnia

96 hour LC50 50% v/v 100% v/v

Chrysler of Canada
Ford of Canada
Freedland Industries
Polysar Corp.
Windsor Bumper Co.

Windsor
Windsor
Kingsville
Sarnia
Windsor

96 hour LC50 100% v/v

Canadian Industries Ltd. (C.I.L.)
Dupont of Canada
Esso Chemical
Ethyl Corp.
Fiberglass of Canada
Ford of Canada
Holmes Insulation
Imperial Oil (Refinery)
Ingersoll STP
Ladney Properties
Luster Division, National Hardware
Petrosar
Scott Road Dump
Shell Oil
Sun Oil
Township Ditch
Windsor Chrome Plating

Corunna
Corunna
Sarnia
Corunna
Sarnia
St. Thomas
Sarnia
Sarnia
Ingersoll
Sarnia
Wallaceburg
Sarnia
Sarnia
Corunna
Corunna
Sarnia
Windsor

WEST-CENTRAL REGION (WC)96 hour LC50 10% v/v

Cyanamid of Canada
Perman's Textiles
Stelco

Welland
Paris
Hamilton

96 hour LC50 10% v/v 50% v/v

Abitibi Provincial Paper
Domtar Construction
Paris Municipal Treatment Plant
Uniroyal

Thorold
Thorold
Paris
Elmira

WEST-CENTRAL REGION (WC) (cont'd)96 hour LC50 50% v/v 100% v/v

Beaver Woodfiber
Domtar Fine Papers
Elmira S.T.P.
Hahn Brass

Thorold
St. Catharines
Elmira
New Hamburg

96 hour LC50 100% v/v

Atlas Steel
B. F. Goodrich
Dofasco
General Motors
Kimberly-Clark
Ontario Paper
Stelco
Texaco

Welland
Niagara
Hamilton
St. Catharines
St. Catharines
Thorold
Nanticoke
Nanticoke

NAME: ABITIBI PRICE INC.
FORT WILLIAM DIVISION

LOCATION: Fort William (NW)

RECEIVING WATER: Mission River to Lake Superior

BACKGROUND HISTORY: See Thunder Bay Division
1977 - MOE issues Control Order to improve
liquid effluents by 1980.

PRODUCTION OUTPUT: 100,000 metric tons/year of newsprint.

EFFLUENT FLOW RATE: Effluents are passed through a series of
lagoon to remove settalable solids.

CHEMISTRY: BOD₅ - 27,000 kg/day
Suspended Solids - 1,000 kg/day
Dissolved Solids - 54,000 kg/day

COMMENTS:

NAME: ABITIBI-PRICE INC.

LOCATION: Iroquois Falls

RECEIVING WATER: Abitibi River

BACKGROUND HISTORY: The mill was constructed in 1914-15 in conjunction with a series of three hydro-electric generating stations with a total capacity of 90 MW on the Abitibi River.

The mill presently operates 7 newsprint machines and one wrapping machine using recycled fibre. At present construction is underway to replace 4 newsprint machines with a new 360 newsprint machine.

In 1963 the low yield sulphite operation was converted to Arbiso high yield bisulphite pulping which resulted in reducing the BOD₅ discharge by 50%.

In 1974 two 32.8 m diameter clarifiers were installed to reduce the loading to the river.

In November 1977 MOE put a control order on the company to reduce both water and air emissions over a five year period.

In December 1978 Beak Consultants submitted their assimilative capacity report to MOE.

There are still ongoing discussions on this report.

PRODUCTION OUTPUT: Newsprint of 900 tons/day.

EFFLUENT FLOW RATE: 70,000 m³/day

CHEMISTRY: discharges BOD 50 tonnes/day
 Dissolved Solids 150
 tonnes/day
 Suspended Solids 7
 tonnes/day

COMMENTS: Assimilative capacity study has been carried out by Beak Consultants to show the relationship between allowable BOD₅ discharge from the mill river flow and temperature. MOE has reviewed this report and still have some questions as to the initial upstream water quality condition.

NAME: ABITIBI PRICE INC SAULT STE MARIE

LOCATION: Sault Ste Marie (NE)

RECEIVING WATER: St. Marys River

BACKGROUND HISTORY: 1900 begin operation - Producing regular and speciality grade newsprint
1974 - Oct - Sulphite/groundwood process changed to draft/groundwood proces
1974 - control order issued requiring reduced suspended solids loadings to less than 5 BD tons/day
1975-76 (July - Feb) - Strike delays implementation of primary treatment
1978 - Primary treatment running 90%

PRODUCTION OUTPUT: This mill produces paper at an average annual rate of 95,000 tons. 1977 figures quote production as 375 tons/day

EFFLUENT FLOW RATE: The discharge sampled for toxicity testing was the Freshwater sewer. Its rate of flow is 5-6 MGPD. 1977 figures show that 13 BD tons/day were sewerred

CHEMISTRY:

pH	=	6.5
Suspended Solids	=	490 mg/L
Dissolved Solids	=	515 mg/.
BOD	=	190 mg/L
COD	=	1040 mg/L
SO ₄	=	120 mg/L
Phenols	=	15 ppb
Fe	=	120 mg/L

COMMENTS: Further mechanical changes, the addition of floating agents etc. should improve the operation and resultant effluent quality to within MOE objectives.

NAME: ABITIBI-PRICE INC.

LOCATION: Smooth Rock Falls

RECEIVING WATER: Mattagami River

BACKGROUND HISTORY: The pulp mill at Smooth Rock Falls was originally constructed in the late 1920's as a sulphite mill. In 1964 the Abitibi Paper Co. Ltd. converted the mill to a Kraft (sulphate) pulping operation.

Process water is provided from a company owned sand filtration plant. Water usage is approximately 40,000 - 50,000 m³/d.

Present control measures have included the construction of a primary clarifier; which discharges to a polishing "foam" lagoon. The present Control Order also includes a new scrubber to remove particulate and TRS compounds. A new chlorine dioxide plant and improved spill control measures are being implemented to improve effluent quality.

PRODUCTION OUTPUT: 300-310 tonne/day

EFFLUENT FLOW RATE: 40,000 - 50,000 m³/d

CHEMISTRY: Effluent Data

Flow (10 ³ m ³ /d)	BOD ₅ (t/d)	Susp. Solid (t/d)	Diss. Solid (t/d)
40,000 - 50,000	6-10	4-7	50-60
-	(ppm) 165	(ppm) 50-70	(ppm) 1200

NAME: ABITIBI PRICE INC.

LOCATION: Sturgeon Falls (NE)

RECEIVING WATER: Sturgeon River to Lake Nipissing

BACKGROUND HISTORY: 1977 - MOE issued control order requiring effluent improvements by 1982.

PRODUCTION OUTPUT: 242 ADT corrugating medium
113 ADT Hardboard

EFFLUENT FLOW RATE: 3.1 MIGD

CHEMISTRY: BOD₅ - 41,200 kg/day
Suspended Solids - 6,700 kg/day

COMMENTS: Aesthetic deterioration from turbidity and the presence of "sewage fungus" organisms were noted below the Mill outfalls and water clarity was reduced significantly for the downstream stretch of the river.

Increased concentrations of chemical parameters associated with Mill effluents were detected but only the phenolics were found to exceed water quality objectives. Since the completion of this survey a 75% reduction in phenolic loading has been achieved by the Mill.

A trend of declining dissolved oxygen concentrations was observed downstream from the Mill to the mouth of the river. However, the concentrations measured remained within the range considered to be suitable for the support of warm water fisheries.

A reduced suitability of habitat for sediment based organisms existed downstream of the Mill to the mouth of the river while deposition of fiber and wood chips was most evident nearest the Mill outfalls.

The bacteriological water quality of the Sturgeon River above the Abitibi Forest Products Mill was good. Below the Mill the bacteriological water quality was poor with bacterial levels generally exceeding the recreational criteria for total body contact. The main input of fecal bacteria and the opportunistic pathogens Klebsiella pneumoniae and Pseudomonas aeruginosa was traced to the Abitibi Forest Products Mill.

NAME: ABITIBI PRICE INC. - THUNDER BAY DIVISION

LOCATION: Thunder Bay (NW)

RECEIVING WATER: Lake Superior

BACKGROUND HISTORY:

- 1912 - Company incorporated initially as Abitibi Pulp and Paper Co.
- 1914 - Company re-incorporated
- 1928 - Acquired Spanish River Pulp & Paper Mills Ltd., Fort William Power Co. Ltd., Manitoba Paper Co. Ltd., St. Anne Paper Co. Ltd., Murray Bay Paper Co. Ltd.,
- 1932 - Acquired entire capital stock of Thunder Bay Co. Ltd.,
- 1955 - Abitibi Corp. formed in Delaware, U.S.A.
- 1960 - Acquires Pembroke Shook Mills Ltd.
- 1963 - U.S. plant acquires two other paper companies.
- 1963 - Acquires Maple Leaf Veneer
- 1965 - Name changed to Abitibi Paper Co.
- 1967 - Acquires controlling interest in City Papers Ltd.,
- 1968 - Acquires all shares of Hilroy Envelope and Stationery Ltd., Cox Newsprint and Cox Woodlands Ltd.,
- 1970 - Acquires Neville Papers
- 1971 - More name changes and amalgamations incorporating Thunder Bay newsprint mill division.
- 1977 - MOE issues a control order to improve BOD and solids by 1982

PRODUCTION OUTPUT: Newsprint manufacturing plant produces 161,500 metric tons/year.

EFFLUENT FLOW RATE: Final outfall in Lake Superior.

CHEMISTRY:

BOD ₅	-	26,000 kg/day
Suspended Solids	-	2,200 kg/day
Dissolved Solids	-	66,000 kg/day

COMMENTS:

NAME: ABITIBI PROVINCIAL PAPER

LOCATION: Thunder Bay (NW)

RECEIVING WATER: Lake Superior

BACKGROUND HISTORY: See Thunder Bay Division
1977 - MOE issues control order to improve
liquied effluents by 1980.
1978 - Sulfite mill shut down to reduce
BOD₅ loading.
- Purchased pulp now used

PRODUCTION OUTPUT: 95,500 metric tons/year from the fine paper
mill.

EFFLUENT FLOW RATE: Effluents are passed through a lagoon system
to remove settalable solids

CHEMISTRY:

BOD ₅	-	2,800 kg/day
Suspended Solids	-	2,800 kg/day
Dissolved Solids	-	86,000 kg/day

COMMENTS:

NAME: ABITIBI PROVINCIAL PAPER LIMITED (Subsidiary of Abitibi Price Inc.,)

LOCATION: Thorold (WC)

RECEIVING WATER: Old Welland Canal

BACKGROUND HISTORY: Plant started operation in 1902. Most recent addition is the #7 paper machine in 1961.

PRODUCTION OUTPUT: 225 A.D.I./D of fine paper. 24 hours/day 6 days/week

EFFLUENT FLOW RATE: 5.25 MIGD

CHEMISTRY: The mill runs mainly on waste paper. The major processes include repulping, bleaching (Cl_2 and NaHClO_3), cleaning, refining and sheet formation. Some purchased pulp is used as well. Major contaminants included B.O.D., C.O.D., solids, free chlorine, and PCB's (1 ppb).

BOD ₅	-	6,400 kg/day
Suspended Solids	-	3,150 kg/day

COMMENTS: Removal of the free chlorine from the effluent removes most but not all of the effluent lethality. The plant is presently under a control order to bring its effluent into compliance with Ministry guidelines.

NAME: ALGOMA STEEL CORPORATION - Sault Ste Marie

LOCATION: Sault Ste Marie (NE)

RECEIVING WATER: St. Marys River

BACKGROUND HISTORY:

- 1900 - began operation
- 1960 - OWRC begins work with Algoma to improve effluent quality of their outfalls
- 1971 - MOE continues monitoring of Algoma outfalls and establishes objectives for Terminal Basin and Dorr Thickener effluent quality.
- 1973 - Installation of Basin Oxygen Furnace
- 1971 - 75 - Installation of settling basins for Tube Mill, Cold Mill, 166¹¹ Plate Mill, Bar and Strip Terminal basins. Terminal Basin serves as suspended solid and oil recovery facility for contaminants in the effluents from Rolling Mills, Coke ovens and Coke Quench.
- 1975 - Installation of #7 Blast furnace
- 1975 - Ministerial Order to reduce concentration of contaminants bringing the Terminal Basin to designated levels.
- 1977 - Algoma operating Coke Oven By-Product Plant in an effort to meet standards of 1975 order.

PRODUCTION OUTPUT: The 1977 total raw steel production at Algoma Steel was 2.97 million tons.

EFFLUENT FLOW RATE:

The combined flow of all discharges from Algoma Steel is 116.5 MGD

Bar and strip	= 13 MGD
Dorr Thickener	= 15.8
60" B.F. Sewer	= 14.4
30" B.F. Sewer	= 4.3
Cold Mill Oil Basin	= 3.0
Cold Mill Acid Sewer	= 2.0
Terminal Basin	= 62.0

CHEMISTRY:

COMMENTS: Due to the tremendous volumes of discharge the environmental impact of effluents from this industry are great.

NAME: ALLIED CHEMICAL OF CANADA LTD.

LOCATION: Amherstburg (SW)

RECEIVING WATER: Detroit River

BACKGROUND HISTORY: Soda ash production started at this site around 1920. A waste treatment system was added in 1957. There are four products manufactured at this site; soda ash, calcium chloride, genetrons and hydrofluoric acid.

PRODUCTION OUTPUT: Confidential

EFFLUENT FLOW RATE: 4 Million Gallons per day

CHEMISTRY: Soda ash and calcium chloride produced by the Solvay Process
 $\text{CaCO}_3 + 2\text{NaCl} \rightarrow \text{Na}_2\text{CO}_3 + \text{CaCl}_2$
Limestone salt soda ash calcium chloride
Genetrons (Allied equivalent of Dupont Freon) $\text{CCl}_4 + \text{HF} \rightarrow \text{CCl}_3\text{F} + \text{HCl}$
Hydrofluoric acid
 $\text{CaF}_2 + \text{H}_2\text{SO}_4 \rightarrow 2\text{HF} + \text{CaSO}_4$
Major contaminants from waste disposal system consisting of large settling lagoons are: dissolved and suspended solids, ammonia, and fluorides

COMMENTS: The dissolved solids, sodium and calcium chloride, are the major discharge from this site. Significant reduction in dissolved solids has been accomplished by doubling the size of the Calcium Chloride plant. Degree of recovery of calcium chloride is predicated on sales demand for calcium chloride. At maximum demand over 60% of the dissolved solids are recovered. However, this plant is a major source of chloride into the lower Great Lakes at 1.6 million pounds per day. There is no other available practicable technology to reduce waste loadings from this process.

NAME: ASHLAND OIL CANADA LTD.

LOCATION: Mississauga

RECEIVING WATER: Lake Ontario

BACKGROUND HISTORY: In 1976 spills in plant yard from piping and pumping equipment were found responsible for high phenolic levels in storm water runoff.

PRODUCTION OUTPUT: Not applicable

EFFLUENT FLOW RATE: Not applicable

CHEMISTRY:

COMMENTS: Housekeeping improvements were carried out by Company and subsequently periodic sampling of stormwater drainage indicates no problems. Recent analytical results show 15 ppb in drainage course.

NAME: ATLAS STEEL COMPANY

LOCATION: Welland (WC)

RECEIVING WATER: Welland River

BACKGROUND HISTORY: The plant which is a subsidiary of Rio Algom has been in operation for at least 50 years. In 1954 a continuous casting machine was added.

PRODUCTION OUTPUT: 18,000 tons of steel per month

EFFLUENT FLOW RATE: 11.3 MIGD

CHEMISTRY: The basic processes include electric arc furnaces to melt the scrap iron plus a variety of casting, rolling, annealing, cleaning and pickeling equipment*. Major contaminants are mainly iron and suspended solids

* This plant is concerned with producing a wide variety of specialty grades of stainless steel

COMMENTS:

NAME: B.A.S.F.

LOCATION: Wyandotte, Michigan (SW)

RECEIVING WATER: Detroit River

BACKGROUND HISTORY: Soda ash production started at this site around 1900. In the late 1960's a propylene oxide plant was added. The waste treatment system was initiated in the late 1930's.

PRODUCTION OUTPUT: Confidential

EFFLUENT FLOW RATE: January to June 1980 3MM I.G.P.D.
July 1980 - 150,000 I.G.P.D.
Discharged from Fighting Island

CHEMISTRY: Soda ash produced - Solvay - shut down December of 1979.

Propylene Oxide produced by chlorohydrin process. Shut down June 1980.

COMMENTS: The B.A.S.F. works which included two soda ash plants, a chlorine caustic plant, hi-purity lime, propylene oxide have all been shut down over the last several years. The remaining operating facilities are hi-purity Ca(OH)_2 , transparent iron-oxide and a Vitamin E. plant. A pharmaceutical plant (Vitamin A) and some research facilities are proposed for the site. A major concern of the Ministry is the stability of the dikes on Fighting Island and the secondary problem of reclamation of the disposal area.

NAME: BEAVER CHARCOAL, CHARCOAL SALES & SUPPLY OF ONTARIO

LOCATION: South River, North Bay (NE)

RECEIVING WATER: South River

BACKGROUND HISTORY:

- 1900 - start up of charcoal production process
- 1964 - OWRC survey showed phenols = 70,000 ppb, BOD = 8,000, pH = 2.9
- 1966 - Plant closed down
 - OWRC survey showed phenol = 500 ppb
 - OWRC sends a letter to company recommending pond excavation
- 1974 - MOE involvement due to complaint regarding tar deposits in Forest Lake
 - MOE water quality survey
 - MOE requests company to clean up; their response is negative
 - MOE-MNR joint cleanup of Forest Lake
- 1975 - MOE water quality survey
 - no company support for clean-up
- 1976 - MOE surveys on water quality and sediment
 - Further letters to company requesting removal of contaminated pond sludge
 - Company acknowledges awareness of contamination in pond
- 1977 - MOE survey continues
 - Company advises that cleanup completed over summer
 - MOE toxicity tests
 - MST for 100% = 1/2 hr.
 - MST for 10% = 36 hr
 - no evidence of cleanup by end of year

PRODUCTION OUTPUT: Charcoal manufacturing plant closed 1967-68.

EFFLUENT FLOW RATE: Effluent from defunct waste holding pond drains to the South River. There is not information on rate of flow.

CHEMISTRY:

- phenol (pond) = 38,772 ppb (average of values available 64 - 77)
- distillation condensate waste
- BOD - 8,000 ppm
- Solids - Dried = 4440 ppm
 - SS = 32 ppm
 - DS = 4408 ppm
 - Inverted = 14 ppm
 - loss = 4426 ppm
- pH - 2.9
- phenolic - 70,000 ppb

COMMENTS: This is an inactive site. All data collected was for purposes of MOE use to determine level of contamination and persuade company to clean up site

NAME: BEAVER WOODFIBER CO. LTD.

LOCATION: Thorold (WC)

RECEIVING WATER: Beaverdam Creek

BACKGROUND HISTORY: Paper and paper products have been produced at this site since before 1900. The present company was formed in 1914.

PRODUCTION OUTPUT: Newsprint 115 ADT/D. Board 225 ADT/D

EFFLUENT FLOW RATE: 5.6 MIGD

CHEMISTRY: This plant produces groundwood newsprint and board. The newsprint consists of 20% sulphite pulp and 80% groundwood. The groundwood mill uses peeled logs brought in by rail. The board mill runs on pulp and recycled waste paper. Major contaminants consist of BOD solids and some phenolic compounds.

BOD ₅	3600 kg/day
Suspended Solids	810 kg/day

COMMENTS: The plant is presently under a control order to bring its effluent into compliance with Ministry guidelines. The newsprint machine is presently not operating.

NAME: BOISE-CASCADE CANADA LTD. - Fort Frances
Division (formerly Ontario-Minnesota Pulp
and Paper)

LOCATION: Fort Frances (NW)

RECEIVING WATER: Rainy River

BACKGROUND HISTORY: 1943 - Company forms, amalgamating 5
Canadian subsidiaries

PRODUCTION OUTPUT: 283 ADT bleached kraft pulp
580 ADT groundwood specialities
138 ADT newsprint

EFFLUENT FLOW RATE: A total volume of 18-23 MGD is discharged by
the mill. Effluents contain wastes from
biologically treated (aeration lagoon) kraft
mill and paper mills, clarified woodroom
wastes, condensor and cooling waters.

CHEMISTRY: pH - 5.5 - 7.2
BOD₅ - 110-210 ppm
COD - 1000 ppm
Total solids
- 2200 ppm
Suspended Solids
- 170 - 220 ppm
Dissolved Solids - 2000 ppm
Phenols - 150-23 - ppb
Total phosphorus - 1-2 ppb
Total Kjeldahl N - 10-15 ppm
Ammonia N - 0.5-0.75 ppm

COMMENTS:

NAME: BOISE CASCADE CANADA LTD. Kenora Paper
Division (formerly Ontario-Minnesota Pulp &
Paper)

LOCATION: Kenora, Ontario (NW)

RECEIVING WATER: Winnipeg River

BACKGROUND HISTORY: 1943 - Company formed, amalgamating 5
Canadian Subsidiaries

PRODUCTION OUTPUT:

EFFLUENT FLOW RATE: A flow of 15-20 MDG is average. Effluents
carry waste from clarified paper mill and
woodroom wastes, sulphite waste liquors,
cooling and condensing waters.

CHEMISTRY: pH 5-6
BOD₅ 100-800 ppm
COD 500-1500 ppm
S.S. 100 ppm

COMMENTS:

NAME: BORG WARNER (CANADA) LTD.

LOCATION: Cobourg, Ontario

RECEIVING WATER: Lake Ontario

BACKGROUND HISTORY: Production started 1966. Manufacture ABS plastic.

PRODUCTION OUTPUT: 1700 MKg/mo

EFFLUENT FLOW RATE: 1136 m³/day

COMMENTS: Effluent treatment consists of filtration, aeration and clarification.

NAME: B. F. GOODRICH CHEMICAL CANADA LTD.

LOCATION: Thorold (WC)

RECEIVING WATER: Welland River

BACKGROUND HISTORY: The plant was built in 1956 and has been in continuous operation ever since.

PRODUCTION OUTPUT: 116 tons/day of polyvinyl chloride

EFFLUENT FLOW RATE: 0.3 MIGD

CHEMISTRY: The plant produces two basic grades for polyvinyl chloride from the vinyl chloride monomer. Polymerization is carried out in batch reactors. Presently, there are no major pollution problems associated with this plant.

COMMENTS:

NAME: CAMPBELL RED LAKE MINES LTD.

LOCATION: I. D. of Balmertwon (NW)

RECEIVING WATER: Balmer Creek - Chukuni River

BACKGROUND HISTORY: 1944 - Company chartered
1949 - 300 TPD mill started
1956 - mill throughput increased to 700 TPD
1971 - mill throughput increased to 825 TPD
1980 - mill throughput increased to 1100 TPD

The company operates a gold mine in which arsenopyrite and pyrite ore is mined underground and surface milled for gold recovery by grinding, amalgamation, flotation, roasting, cyanidation, and refining. Tailings are discharged to a dammed area in the southwest corner of Balmer Lake. A decant structure allows effluent to flow into the lake which discharges into the Chukuni River via Balmer Creek.

PRODUCTION OUTPUT: 1100 TPD mill throughput

EFFLUENT FLOW RATE: 7.2 MGD (I) at Balmer Creek (combined discharge with Dickenson Mines Ltd.)

CHEMISTRY:
(1979) pH - 7.5
Suspended Solids - 15 ppm
Copper - 0.45
Nickel - 0.45 ppm
Zinc - 0.20 ppm
Lead - 0.03 ppm
Arsenic - 0.50 ppm
Cyanide - 0.60 ppm

COMMENTS: Final effluent of the company is assumed to be Balmer Creek at the Balmer Lake outlet. Since Dickenson Mines Ltd. effluent is also discharged to Balmer Lake, this is a combined effluent.

NAME: CANADIAN INDUSTRIES INC. (C.I.L.) - Lambton Works

LOCATION: Courtright (SW)

RECEIVING WATER: St. Clair River

BACKGROUND HISTORY: Construction started in March 1965 and was completed in Mid-1967. The plant was expanded in 1975 with two additional ammonia plants and a new process for sulphur coated urea.

PRODUCTION OUTPUT: 750,000 tons/year of a wide variety of fertilizers including liquid ammonia, urea, and ammonium, nitrate, mono and diammonium phosphate, phosphoric acid and nitric acid

EFFLUENT FLOW RATE: 750×10^6 lb/day

CHEMISTRY: The anhydrous ammonia plant combines hydrogen from natural gas with steam and atmospheric nitrogen. Phosphate rock and sulphuric acid are also used. The effluent may contain ammonium phosphate.

COMMENTS: The company operated two automatic Dowex ion exchange filters that remove virtually all the ammonia from the treated flow.

NAME: CANADIAN INDUSTRIES LIMITED (C.I.L.)

LOCATION: Nobel, Ontario (Parry Sound) (NE)

RECEIVING WATER: Georgian Bay

BACKGROUND HISTORY:

- 1920 - Start up of NG explosives
- 1940 - Start up of Nitric Acid
- Jan. 2/70 - Installation of pH controller for liquid Na OH
neutralization of acid spills
- Oct. 25/71 - Construction of holding pond with pH controlled
automatic shut off valve at outfall
- Company submitting pH strip chart for 8 hour period
every Tuesday
- Jan. 25/72 - Start of monthly effluent sampling programme.
Analysis to include pH, ammonium, nitrate,
sulphates, phosphates and Freon extractables.
- Sept. 13/73 - 85,000 lbs. sulphuric acid spill. Treated with Na
OH for pH control
- Aug. 29/73 - OWRC sediment sampling programme of Georgian Bay
vicinity of pond discharge
- Company requested to submit pH strip charts for 24
hour period every Tuesday
- Jan. 16/76 - 500 gal. sulphuric acid spill treated with Na OH
for pH control
- April 1/76 - Dyke Failure at holding pond
- Oct. 25/76 - Dyke failure at holding pond, same vicinity of
previous break. Plywood sluice-way installed to
direct incoming water to centre of pond
- Sept. 14/76 - Bioassay Toxicity Test
- Feb. 14/77 - 7,000 lbs. nitric acid spill treated with Na OH for
pH control
- April 21/77 - Dyke failure at holding pond, extensive repairs
included concrete reinforcement walls
- Sept. 8/77 - C of A's issued for the manufacturing of Ethylene
Glycol Mononitrate cap sensitive slurry explosives
- Dec. 6/77 - 3800 nitric acid spill treated with Na OH for pH
control
- Jan. 18/78 - 9000 kilos nitric acid spill treated with Na OH for
pH control

PRODUCTION OUTPUT: NG = 3×10^6 tons in 1977
Nitric Acid - 250 tons/month

EFFLUENT FLOW RATE: Unknown rate of discharge into creek leading
directly to Georgian Bay

CHEMISTRY: Values quoted are based on a 6 month period
in 1977.

Nitrate	=	1179 lbs/month
Ammonia	=	215 lbs/month
Sulfate	=	2179 lbs/month
pH	=	6.5

COMMENTS: Toxicity tests would indicate that volatiles
and/or BOD, COD are the major contributors to
the observed toxicity.

NAME: C.I.L. #2

LOCATION: Sudbury (NE)

RECEIVING WATER: Kelly Lake

BACKGROUND HISTORY: 1960 - Begins production

PRODUCTION OUTPUT: This operation produces H_2SO_4 .

EFFLUENT FLOW RATE: 300,000 gallons/day of cooling water from Kelly Lake is spilled over. These contain H_2SO_4 and are recycled to the lake

CHEMISTRY: 1979 avg.

D. S.	-	1856 ppm
SO_4	-	1039 ppm
Fe	-	0.45 ppm
Cu	-	0.43 ppm
Ni	-	0.32 ppm

* shut down for the months of January to July

COMMENTS: This is an auxillary operation to the smelting operations carried out in the area. It utilizes sulfates from the milling and smelting operations to produce H_2SO_4 . Its effluent had an LC_{50} of 36%.

5-25

NAME: CANADIAN INTERNATIONAL PAPER COMPANY (C.I.P.)

LOCATION: Hawkesbury (SE)

RECEIVING WATER: Ottawa River

BACKGROUND HISTORY: 1963 - settling pond constructed

1975 - Control Order issued requiring
chemical recovery for spent sulphite
liquor to be installed by December 31,
1980. The company was also to submit
a proposal to treat toxic wastes by
December 31, 1981

PRODUCTION OUTPUT: Dissolving grade pulp: 270 tons/day

EFFLUENT FLOW RATE: 24×10^6 gallons/day

CHEMISTRY: Suspended solids = 3 tons/day
BOD = 160 tons/day
pH = 3
highly coloured brown

COMMENTS:

NAME: Chemical Developments Canada

LOCATION: Longford Mills, Rama Township

RECEIVING WATER: Lake St. John

BACKGROUND HISTORY: C.D.C. produces chemicals used in the manufacturing of detergents. Prior to 1976, waste water was treated through an aeration basin and the final effluent diluted by cooling water prior to discharge to Lake St. John. A Ministry study of Lake St. John in 1975 showed high levels of phenols in the lake water. In 1976 a Director's order was issued under Section 69 of the O.W.R.C. Act to install a biological treatment system with phosphorus removal and later add a filtration method. The original date for completion of installation was July/77 but on request this was extended to December 31, 1977. The December deadline was met.

Raw Materials: Ethylene oxide, Nonene, Sodium Hydroxide, Fatty acids and Esters, Fatty Alcohols, Methanol, Isopropane, Alcohol LS, Alpha Flocc, Monochloroacetic Acid, Amines, Dodecyl Benzene, Methyl-Chloride, Aqua Ammonia, Sodium Xylene Sulphonates.

Products: Ethoxylated Nonyl Phenol, Nonyl Phenol, Sulfonic Acid and Salts, Lauryl Sulphates, Quaternary Amines, Sulphated Ethoxylated, Carboxy Methyl Cellulose Liquid Detergents, Amides.

PRODUCTION OUTPUT: 5,000,000 lb/month

TOTAL EFFLUENT FLOW RATE to LAKE ST. JOHN: Average 732,000 imp. gallons/day. Represents total effluent from treatment plan plus clean cooling water from plant.

TOTAL EFFLUENT FROM TREATMENT PLANT: Average 36,750 imp. gallons/day (period May 29 - June 25, 1980)

CHEMISTRY: The wastes from C.D.C. originate from the manufacture of phosphate-free detergents, wetting agents, crude and refined sodium carboxy-methylcellulose, fabric softeners, foam stabilizers, emulsifying agents, nonylphenol, and other similar products.

COMMENTS: Company has installed a waste water treatment facility since lethal toxicity testing was conducted.

5-27

NAME: CHROMASCO LTD.

LOCATION: Haley Station, Ontario, Ross Twp., SE Region

RECEIVING WATER: Small Creek to Ottawa River

BACKGROUND HISTORY: Cooling pond and settling pond installed prior to 1967.

PRODUCTION OUTPUT: Calcium, Magnesium metal
7.21 T P H
24 hrs/day

EFFLUENT FLOW RATE: Maximum 1765L/min.

CHEMISTRY:	Sr	-	0.55	Total Solids	-	685
	Li	-	0.01	Susp. Solids	-	15
	Al	-	0.43	pH	-	8.9
	Fe	-	0.40	Nitrate	-	1.4
	V	-	0.01	Nitrite	-	0.65
	T	-	0.10	Ammonia	-	13.0
	Cr	-	0.08	Total Kjeldahl	-	13.0
	Cd	-	0.002	Sulphate	-	70.0
	Pb	-	0.05	Phosphorus	-	0.04
	Ag	-	0.01			
	Co	-	0.01			
	Ni	-	0.01			
	Cu	-	0.07			
	Mn	-	0.06			
	ZN	-	0.06			

NAME: Chrysler of Canada Ltd.

LOCATION: Windsor (SW)

RECEIVING WATER: Detroit River

BACKGROUND HISTORY: The plant started production about 1930. A major expansion between 1962 and 1968 altered production from 50,000 units/year to 219,000 units/year.

PRODUCTION OUTPUT: 1977 - 215,000 units. Cars and vans

EFFLUENT FLOW RATE: 2.36 MIGD

CHEMISTRY: Basic auto assembly including engine machining and assembly and auto assembly, welding, painting, bonderizing.

Major contaminants include BOD, COD, suspended solids, dissolved solids, oils and zinc

COMMENTS: The treatment system appears to be both well designed and operated.

NAME: COCHRANE ENTERPRISES LTD. - name now changed to: J. H. NORMICK INC.

LOCATION: Cochrane, Ontario

RECEIVING WATER: Swampy area; Brower Creek then to Abitibi River

BACKGROUND HISTORY: During the late 1960's this company began operating a plywood mill. Mill wastes were burned in a conical burner. Air Resources Branch issued a Program Approved to close the burner in 1974. Despite their consultants recommendations the company began operating a woodwaste landfill site. The site now covers an area of 45 acres; to a depth of 6-20 feet. Discharges of leachates from the landfill site have been the cause of many complaints from local residents.

PRODUCTION OUTPUT: 6.8 fbm/y - 1/4 basis (plywood)
50 fbm/y - lumber

EFFLUENT FLOW RATE: undetermined leachate discharge - highly dependant on precipitation

CHEMISTRY: Leachate Quality (ppm)

<u>BOD₅</u>	<u>COD</u>	<u>D.S.</u>	<u>S.S.</u>	<u>Phenol (ppb)</u>	<u>Conduct. (uMHO/cm)</u>	<u>Colour</u>	<u>pH</u>
200 -600	200 -1500	1000 -2000	600	3,000	900	500 -700	7.0

NAME: COLLIE FABRICS LTD.

LOCATION: Almonte

RECEIVING WATER: Mississippi River

BACKGROUND HISTORY: Collie Fabrics occupy the plant in Almonte formerly owned by Zephyr Textiles. Zephyr went out of business in 1977 and the plant was subsequently purchased by Collie Woolen Mills in 1978. Collie have since moved all of their dye operations from Appleton, Ontario to Almonte.

Collie Fabrics are presently in the process of hooking their process effluent discharge into the town's sanitary sewer system.

PRODUCTION OUTPUT:

EFFLUENT FLOW RATE: 450 KL/day 5 day/wk

CHEMISTRY: average concentrations: BOD, 100 mg/L
SS, 30-90 mg/L
TP, 8-12 mg/L

COMMENTS:

NAME: COURTAULDS (CANADA) LIMITED

LOCATION: Cornwall (SE)

RECEIVING WATER: St. Lawrence River

BACKGROUND HISTORY: 1977 - Control order is issued requiring reduction in zinc, BOD₅, and suspended solids plus installation of an extended diffuser outfall

PRODUCTION OUTPUT: Rayon and viscose production - sent to TCF of Canada Ltd.
Caravelle Carpets was closed November, 1980.

EFFLUENT FLOW RATE: Sulfide sewer: 1,000,000 gal/day
(Mostly TCF effluent)
Viscose sewer: 500,000 gal/day
Acid sewer: 1,200,000 gal/day (50% TCF effluent)

CHEMISTRY: Combined acid sewer pH: 1-2
DOC High
suspended solids: 75 ppm
dissolved solids: 10000-14000 ppm
zinc: 20-50 ppm

Viscose sewer PH 11.5 ppm
sulfide 15 ppm

COMMENTS:

NAME: CYANAMID OF CANADA LTD., Welland works

LOCATION: Welland (WC)

RECEIVING WATER: Welland River

BACKGROUND HISTORY: In one form or another chemical manufacturing has been carried out at this site since the early part of the century.

PRODUCTION OUTPUT:

Ammonia plant	775 tons/day
Nitric acid plant	500 tons/day
Ammonium Nitrate plant	600 tons/day
Urea Plant	365 tons/day
Dicyandiamide plant	15 tons/day
Guanidine Nitrate Plant	27 tons/day
Picrite plant	27 tons/day
CO ₂ plant	96 tons/day
H.D.S. plant	5 tons/day

EFFLUENT FLOW RATE: 36" Sewer 0.72 MIGD
Thompson's Creek 2.5 MIGD

CHEMISTRY: The basic production process in this plant is the manufacture of ammonia from natural gas, steam and atmospheric nitrogen. There are additional plant units manufacturing nitric acid, ammonium nitrate, urea, dicyandiamide, xanthates among others.

Nitrogen compounds in general and ammonia in particular are especially troublesome in both effluent flows.

COMMENTS: The effluents from this plant have not been evaluated for the presence of organic compounds that could have adverse biological effects. Presently the plant is under a control order to bring its effluents into compliance with Ministry guidelines.

NAME: DENISON MINES LIMITED - Stolley Lake

LOCATION: 11 miles north of Elliot Lake on Hwy 108 (NE)

RECEIVING WATER: Serpent River

BACKGROUND HISTORY:

1957	-	begin mining and milling uranium oxide
1967	-	MOE initiates monthly water monitoring programme
1969	-	New settling pond below tailings area excavated
1970-76	-	Annual MOE - company meetings to plan discharge control and Ra level stabilization
1977	-	Control order issued requiring Radium leaching studies and stabilization of tailings areas and reduction of N cpd output

PRODUCTION OUTPUT: The mine-milling proces produces yellow coke (ammonium diurate)
Output figures are unavailable but estimates put mining rate at 7500 tons/day

EFFLUENT FLOW RATE: The point of discharge is the Stollery Lake Outlet, at a flow of 2500 IGPM

CHEMISTRY:

pH	=	8
Radium 226	=	3 5 pCi/l
NH ₄	=	45 mg/L
NO ₃	=	100 mg/L
heavy metals	=	OK

COMMENTS: MOE investigations into the lethality of the stream were initiated to establish background data. Lethality was determined by 96 hr. static bioassay. The results of this test are a 96 hr LC₅₀ 56%.

NAME: DENISON MINES LIMITED - Stanrock

LOCATION: 20 miles N. E. of Elliot Lake on Quirke Lake (NE)

RECEIVING WATER: Serpent River basin

BACKGROUND HISTORY: 1958 - 1959: Conventional mining
1959 - 1971: Bacterial leaching
1973 - Denison takes over mining operation
1974 - MOE and Denison agree to install treatment plant
1976 - Treatment plant opened
1977 - Treatment commenced (Ba & lime)
- Control order issued requiring the stabilization of tailing areas. Minimize water flow, leaching and wind erosion by covering. It was hoped that the effort would encourage revegetation.

PRODUCTION OUTPUT: The property is not being mined at present

EFFLUENT FLOW RATE: The point of discharge sampled for bioassay was the "New Dam Overflow". There is no information presently available on rate of flow.

CHEMISTRY: pH = 2.5
Radium 226 = 2 pCi/l
Fe = 250 mg/L
Diss. Solids = 2500 mg/L

COMMENTS: MOE investigations into the lethality of the streams were originated to establish base data. Lethality, as determined by 96 hr. static bioassay indicated an LC₅₀ 55%, neutralization rendered the effluent non-toxic

NAME: DICKENSON MINES LIMITED

LOCATION: I. D. of Balmertown

RECEIVING WATER: Balmer Creek - Chukuni River

BACKGROUND HISTORY: 1944 - property staked
1948 - milling operations commenced
(Dickenson Red Lake Mines Ltd.)
1960 - amalgamated with Lake Cinch Mines Ltd.
to form Dickenson Mines Ltd.
1970 - Dickenson purchased Robin Red Lake
Mines Limited

The company operates a gold mine in which arsenopyrite and pyrite ore are mined underground by both shrinkage and cut-and-fill stoppage methods. Gold is recovered in the mill through the process of grinding, amalgamation, floatation, cyanidation and refining. Contaminants discharged in wastewaters from this operation include cyanide, arsenic and heavy metals.

PRODUCTION OUTPUT: 450 TPD mill throughout

EFFLUENT FLOW RATE: 7.2 MGD(I) at Balmer Creek (combined
discharge with Campbell Red Lake Mines Ltd.)

CHEMISTRY:
(1979)

pH	-	7.5
Suspended Solids	-	15 ppm
Copper	-	0.45 ppm
Nickel	-	0.45 ppm
Zinc	-	0.02 ppm
Lead	-	0.03
Arsenic	-	0.50 ppm
Cyanide	-	0.60 ppm

COMMENTS: Final effluent of the company is assumed to be Balmer Creek at the Balmer Lake outlet. Since Campbell Red Lake Mines Ltd. effluent is also discharged to Balmer Lake, this is a combined effluent.

NAME: DOMINION FOUNDRY AND STEEL CO. (Dofasco)

LOCATION: Hamilton (WC)

RECEIVING WATER: Burlington Bay

BACKGROUND HISTORY: The plant started as a foundry well before the turn of the century. In the mid-1950's the open hearth furnaces were retired and replaced with the more efficient basic oxygen furnace.

PRODUCTION OUTPUT: 4.0 million tons/year (1979). Much of the production is in the form of sheet steel used in car bodies and major appliances.

EFFLUENT FLOW RATE:

Ottawa Street Sewer	46 MIGD
West Bayfront	74.8 MIGD
Boiler House	30.0 MIGD
Coke Oven/Melt Shop	16.5 MIGD
Total	167.3 MIGD

CHEMISTRY: Basic iron and steel plant; Electrolytic tinning, pickling, galvanizing and annealing. High silicon steel is also made for transformers. Electric arc funaces supply the foundry which makes castings for rail car under carriages.

Major contaminants include:

Ottawa Storm Sewer	- Solids, iron, phenolics
West Bayfront	- Solids, ammonia phenolics cyanides
Boiler House -	Cooling water only
Coke oven/Melt shop	- phenolics, ammonia

COMMENTS: Modifications to the ammonia stripper will reduce NH_3 + phenols into West Bayfront sewer. Increased capacity of Hot Mill Filtration Plant will reduce solids (iron) loadings to Ottawa Storm Sewer. Improved efficiency of Blast Furnace thickener will reduce solids (iron) loading to West Bayfront sewer.

NAME: DOMTAR FINE PAPERS LTD.

LOCATION: Cornwall (SE)

RECEIVING WATER: St. Lawrence River

BACKGROUND HISTORY: 1972 - sulphite pulp mill shut down
1972 - dry debarking and clarifier installed
1974 - steam stripper equipment installed:
BOD₅ loadings reduced
1975 - start up of Copeland Reactor resulted
in further reduction in BOD₅ loadings
1975-76 - improvement in clarifier operation and
cutback on water usage resulted in
reduced suspended solids

PRODUCTION OUTPUT: fine papers: 650 tons/day
bleached kraft pulp: 400 tons/day

EFFLUENT FLOW RATE: 30 x 10⁶ gallons per day is discharged via
a diffuser outfall extending 300 feet into
the River

CHEMISTRY: BOD₅: 16 tons/day
Suspended solids: 15 tons/day

COMMENTS:

NAME: DOMTAR PACKAGING/DRAFT PAPER & BOARD DIVISION

LOCATION: Red Rock (NE)

RECEIVING WATER: Nipigon Bay

BACKGROUND HISTORY:

- 1936 Property purchased at Red Rock by Lake Sulphite Pulp Company.
- 1938 Lake Sulphite Pulp Company goes bankrupt and construction ceases.
- 1942 Property and assets purchased by Brompton Pulp and Paper Company.
- 1944 Construction begins of unbleached sulphate pulp mill. Paper machine transferred from Bromptonville, Quebec.
- 1945-Oct. Mill operation begins producing unbleached kraft pulp, 16 point linerboard and 9 point corrugating medium, capacity 200 tons/day.
- 1948 Installed three magazine grinders and 10 wet machines to produce market groundwood pulp.
- 1952 Operation of mill taken over by St. Lawrence Corporation.
- 1954 Installed No. 2 Paper Machine to produce linerboard, No. 1 Paper Machine converted to newsprint.
- 1959 Installed 350 tons/day recovery furnace and 200 tons/day three stage bleach plant.
- 1961 Assets taken over by Dominion Tar and Chemical, later Domtar.
- 1965 Linerboard capacity increased to 500 tons/day. New continuous digester, new kraft washers, modifications to the No. 2 Paper Machine.
- 1969-1972 Major mill improvement program to increase linerboard capacity to 600 tons/day, also extensive pollution abatement program.
- 1973 Shutdown of facilities for receiving of wood by water. From now on, all roundwood to be land hauled.
- 1973-1974 Commence expansion of linerboard production capacity to 700 tons/day. Additions and improvements to the kraft pulp mill and to No. 2 Paper Machine.
- 1977 Requirement and direction issued by MOE

PRODUCTION OUTPUT: Produces 170 tons/day groundwood and 660 tons/day Kraft pulp to manufacture 228 M tons/year linerboard and 65 M tons/year newsprint

EFFLUENT FLOW RATE: The mill effluent has been divided into 3 separate streams.

- i) Uncontaminated effluents: 7 m³/min cooling water and seal water
- ii) Primary clarification effluent: 37 m³/min high suspended solids wastewater processed by a 46 m diameter clarifier
- iii) Low Suspended Solids Stream: 14 m³/min low suspended solids waste water

CHEMISTRY: BOD₅ = 15.400 kg/day
Suspended Solids = 4,600 kg/day

COMMENTS:

NAME: DOMTAR FINE PAPERS LTD.

LOCATION: St. Catherines (WC)

RECEIVING WATER: Old Welland Canal

BACKGROUND HISTORY: NA

PRODUCTION OUTPUT: 150 ADT/D 24 hours per day: 5 days/week

EFFLUENT FLOW RATE: 2.5 MIGD

CHEMISTRY: Fine paper mill, repulping, cleaing,
refining, sheet formation.
74% purchased pulp
26% waste paper
Major effluent components are solids, BOD,
COD.
BOD₅ - 440 kg/day
Suspended Solids - 150 kg/day

COMMENTS: The plant is presently under a control order
to bring its effluent into compliance with
Ministry guidelines.

NAME: DOMTAR PACKAGING

LOCATION: Trenton (SE)

RECEIVING WATER: Trent River

BACKGROUND HISTORY:

1926-27-	Mill was designed and built to produce 40 tons/day using milk-of-lime method
1951 -	Caustic soda replaced lime and soda ash method of pulping
1956 -	New pulping facilities installed using caustic soda semichemical process. Soon after changed to neutral sulphite semichemical (NSSC) process
1969 -	Diffuser pipe installed for discharge of process water
1972-74 -	In plant improvement to reduce solids & BOD losses
1974 -	Pulping process altered to a sulphur-free system using sodium carbonate semi chemical cook

PRODUCTION OUTPUT: 180 tons of corrugating medium daily

EFFLUENT FLOW RATE:

process water effluent	47,000 I.G.P.D.
vacuum seal effluent	133,000 I.G.P.D.
cooling water effluent	368,000 I.G.P.D.

CHEMISTRY:

Suspended solids	400 lbs/day
BOD ₅	3 tons/day

COMMENTS:

NAME: DOW CHEMICAL OF CANADA LTD., SARNIA DIVISION

LOCATION: Sarnia (SW)

RECEIVING WATER: St. Clair River

BACKGROUND HISTORY: 1942 styrene plant started production. Presently the plant employs 1375 people and runs 23 separate production units producing a variety of inorganic and organic chemicals. Units in chronological order of production are: ethylene and propylene glycol plant, chlorine and caustic soda plant, ethylene, styrene, chlorinated solvents, latex, vinyl chloride, polyethylene and pelspan, expanded polystyrene plant

PRODUCTION OUTPUT: The largest, most diversified chemical complex in Canada. Products include various solvents, glycols, ammonia polymers, chlorine and caustic

EFFLUENT FLOW RATE:

42" sewer	13.2 MIGD
48" sewer	16.2 MIGD
Acid Tile Drain	2.3 MIGD
First St. Sluice	7.3 MIGD
2nd St. Sewer	12.8 MIGD
3rd St. Sewer	22.8 MIGD
D.O.E.O.	35.7 MIGD
4th St. Sewer	68.5 MIGD
Steam plant	3.0 MIGD
Total	182.2 MIGD

CHEMISTRY:

COMMENTS: The basic raw materials consist of brine from deep wells and light hydrocarbon feed stocks from neighbouring refineries. This industrial complex is a major source of chloride to the St. Clair River. It is believed to have been the major source of mercury in the St. Clair River, Lake St. Clair and the Detroit River. Styrene, ethylbenzene, chlorine and various chlorinated organic compounds have been measured in various effluents.

NAME: DUPONT OF CANADA INC.

LOCATION: Corunna (SW)

RECEIVING WATER: St. Clair River

BACKGROUND HISTORY: Production started in 1959.

PRODUCTION OUTPUT: 450 million lbs/year. Total production sold to other manufacturers. No retail sales.

EFFLUENT FLOW RATE: 6 MIGD

CHEMISTRY: Manufactures a complete range of polyethylene resins. Ethylene feed stock from Imperial Oil and Petrosar is polymerized to produce polyethylene. Effluent is basically cooling water. Previously some escape of polyethylene pellets. Methylene chloride and 1,2-dichloroethane have been measured in the effluent.

COMMENTS:

NAME: E. B. EDDY FOREST PRODUCTS LTD.

LOCATION: Espanola (NE)

RECEIVING WATER: Spanish River

BACKGROUND HISTORY: 1980 - Control order issued requiring effluent improvements by 1984.

PRODUCTION OUTPUT: 685 ADT pulp - bleached kraft
110 ADT kraft papers

EFFLUENT FLOW RATE: 27.5 MIGD

CHEMISTRY: BOD₅ - 22,727 kg/day
Suspended Solids - 7590 kg/day

COMMENTS:

NAME: E. B. EDDY FOREST PRODUCTS LTD.

LOCATION: Ottawa/Hull

RECEIVING WATER: Ottawa River

BACKGROUND HISTORY: 1978 - Speciality paper system clarifier is installed
- May - Control Order issued;
Separate and treat all sanitary wastes by Dec. 1981.
Segregate uncontaminated and contaminated waste flows in the Specialty Paper Mill by Jan. 1981. Reduce total suspended solids from the Specialty Paper Mill and the Board Mill by June, 1982 and Dec. 1983 respectively.
1979 - Sept. Board Mill was closed down.

PRODUCTION OUTPUT: 164 Tonnes/Day Paper

EFFLUENT FLOW RATE: 11.1 ML/day

CHEMISTRY: SS: 257 mg/L, BOD₅: 150 mg/L, Dissolved Solids: 219 mg/L

COMMENTS: The company is complying with the Control Order. The above figures are 1980 averages to August. Dissolved solids in fresh river water averages 79 mg/L for the period.

NAME: ELMIRA SEWAGE TREATMENT PLANT

LOCATION: Elmira (WC)

RECEIVING WATER: Canagagigue Creek to Grand River

BACKGROUND HISTORY: In 1965 the effluent from the Uniroyal Company and the town of Elmira were combined to provide better treatment for the companies effluent.

PRODUCTION OUTPUT:)
)
EFFLUENT FLOW RATE:) 450,000 IGPD

CHEMISTRY: The plant is a four chamber plug flow activated sludge sewage treatment plant. The facility now operates as a completely mixed extended aeration system. For major contaminants see the Uniroyal Co. Ltd.

COMMENTS:

NAME: ESSO CHEMICAL CANADA LTD.

LOCATION: Sarnia (SW)

RECEIVING WATER: St. Clair River

BACKGROUND HISTORY: Esso Chemicals Canada is a subsidiary of Imperial Oil Enterprises Ltd. The plant went into production in 1957. A polyvinyl chloride resin plant went into production in 1966.

PRODUCTION OUTPUT: NA

EFFLUENT FLOW RATE: 2.4 MIGD

CHEMISTRY: Naphtha specialities plant produces solvents for dry cleaning, printing ink, rubber industry. Two hydrocarbon cracking units produce ethylene, propylene, butylenes, butadiene, benzene, toluene, xylene. These compounds are used in the manufacture of styrene, paints, inks and explosives.

COMMENTS: Work will begin in mid-1978 on an activated carbon filtration system for the petrochemical plant effluent.

NAME: ETHYL CANADA INC.

LOCATION: Corunna (SW)

RECEIVING WATER: St. Clair River

BACKGROUND HISTORY: Production started in 1956. Started production of ethyl chloride and ethylene dichloride in 1960. Production of Antioxidants, detergents, de-icers, corrosion inhibitors, aluminium alkyl catalysts and pharmaceuticals started in 1964. In 1976 and 1977 two new units were built to make intermediate chemicals for the pharmaceutical industry.

PRODUCTION OUTPUT: Organo-lead compounds, aluminum alkyl compounds, some pharmaceutical products.

EFFLUENT FLOW RATE: 11.0 MIGD

CHEMISTRY: Manufacturers tetra ethyl lead (TEL) and tetra methyl lead (TML) by reacting a lead sodium alloy with ethyl chloride (methyl chloride). Major contaminants in the effluent include various forms of lead plus some chlorinated and brominated compounds.

COMMENTS: Service water for this plant is taken from Shell Oil.

NAME: FALCONBRIDGE

LOCATION: Fecunis Lake (NE)

RECEIVING WATER: Moose Creek which drains into Vermillion River and finally into the Spanish River

BACKGROUND HISTORY:

PRODUCTION OUTPUT:

EFFLUENT FLOW RATE: Small flow 1×10^6 g.p.d. except during precipitation

CHEMISTRY:	Fe	=	0.9 mg/L
	Ni	=	14 mg/L
	Cu	=	0.7 mg/L
	pH	=	4.2 mg/L
	SS	=	0.2 mg/L
	d.s.	=	706 mg/L
	Sulfates	=	402 mg/L

COMMENTS: Investigations initiated as the effluents from these operations are to be transferred to the Moose Lake Treatment Plant. Main source of contamination is surface drainage from tailings areas.

NAME: FALCONBRIDGE

LOCATION: Moose Lake (NE)

RECEIVING WATER: Moose Lake

BACKGROUND HISTORY: 1960 treatment plant operations begin
1973 Expansion of tailings area
1976 MOE toxicity testing
1977 MOE toxicity testing

PRODUCTION OUTPUT:

EFFLUENT FLOW RATE: Effluent treatment with limestone is dumped
into Moose Lake at a rate of 2.3×10^6
g.p.d.

CHEMISTRY:

D. S.	=	99 mg/L
Sulfate	=	573 mg/L
Fe	=	0.3 mg/L
Ni	=	0.7 mg/L
Cu	=	0.02 mg/L
pH	=	5.8 mg/L

COMMENTS: Investigations initiated as Falconbridge
wastewater treatment plant discharges to
Moose Lake. Other contributing factors to
its over-all contaminant load would be
leachings from the Fecunis & Strathcona
tailings area.

NAME: FIBERGLASS OF CANADA LTD.

LOCATION: Sarnia (SW)

RECEIVING WATER: St. Clair River via the Township ditch

BACKGROUND HISTORY: Production started in 1948.

PRODUCTION OUTPUT: Mineral wool insulation and pipe insulation.

EFFLUENT FLOW RATE: 0.4 - 2.2 MIGD
average approximately/MIGD

CHEMISTRY: Basic glass production fiberized into
filaments, and matted to form batts.
Urea/formaldehyde and phenol formaldehyde
resins are also used for accoustic panels.

COMMENTS: New electric melt furnace installed in 1977
which was the largest in the world.

NAME: FORD OF CANADA

LOCATION: Windsor (SW)

RECEIVING WATER: Detroit River

BACKGROUND HISTORY: Two machining plants, an iron casting foundry and an electric power utility building were all built before 1930. In the mid 1960's extensive work began on the examination of plant wastes and in-plant sources.

PRODUCTION OUTPUT: NA

EFFLUENT FLOW RATE: 44-50 MIGD

CHEMISTRY: Major contaminants include solids, oils, phenolics

COMMENTS: Effluent characteristics and waste treatment facilities have been described in Vaughn, Stewart H and R. S. McCurdy, The Industrial Wastewater Treatment Program, Ford-Windsor Complex, 19th Ontario Industrial Waste Conference, Toronto, June 1972.

NAME: FREEDLAND INDUSTRIES

LOCATION: Kingsville (SW)

RECEIVING WATER: Treated waste discharged to municipal sanitary sewer than the Lake Erie

BACKGROUND HISTORY: Production started 1970

PRODUCTION OUTPUT: 25000 ft² of bright and semibright nickel plating
25000 ft² of chromium plating

EFFLUENT FLOW RATE: 96000 IGPD

CHEMISTRY: Metal degreasing, electrocleaning plus Ni and Cr plating. Effluent contains traces of Cu, Ni and Fe

COMMENTS: Complete shut down in 1980. Freedland, as an automobile parts supplier has been severely damaged by the downturn in the North American car industry. They have, however, recently stated that they will start up the stamping and polishing section of the plant, but will not do any further electrocoating. Their equipment has been put up for sale.

NAME: GENSTAR CHEMICAL LIMITED

LOCATION: Maitland (SE)

RECEIVING WATER: St. Lawrence River

BACKGROUND HISTORY: 1961 - Original nitric acid plant and ammonia
nitrate plant built by Brockville
Chemicals
1966 - Second nitric acid plant and a urea
plant built
1976 - Third nitric acid plant, second
ammonia nitrate plus enlarging of
existing ammonia nitrate plant
completed

PRODUCTION OUTPUT: ammonia: 90,000 tons/annually
nitric acid: 315,000 tons/annually
Ammonium nitrate: 180,000 tons/annually
urea: 50,000 tons/annually
nitrogen solution 100,000 tons/annually

EFFLUENT FLOW RATE: 400,000-500,000 gal/day via a submerged
outfall, 1,100 feet long and 18 feet deep

CHEMISTRY: free ammonia: 3,100 lb/day
total kjeldahl nitrogen 4,100 lb/day
nitrate nitrogen 1,700 lb/day

COMMENTS:

NAME: GREAT LAKES FOREST PRODUCTS LTD., DRYDEN

LOCATION: Dryden, Ontario

RECEIVING WATER: Wabigoon River

BACKGROUND HISTORY:

- 1910 - Town of Dryden incorporated and dam built
- 1913 - Pulp mill in production
- 1937, 1954, 1959, 1960, 1966 - eight official complaints from tourists and other organizations of pollution and nuisance, to OWRC
- 1951 - Lands and forests survey finds no fish within 40 miles downstream from Dryden
- 1958 - Market rejection of fish from Clay Lake - tainting
- 1962 - Chlor-alkali plant in operation
- 1968 - Water quality survey by OWRC
- Dryden Water Quality Pollution control plant in operation
- 1969 - Water pollution survey of Wabigoon River by OWRC
- 1970 - Major surveys for mercury in fish by MOE, MNR, FWI.
- Control orders issued by MOE to Dryden Paper Co. to control pollution
- 1971-75 - Company complies by installing treatment systems
- Major surveys of mercury in fish by MOE, MNR
- 1971-72 - Survey of mercury in sediments by FWI
- 1975 - Company changes process for chlor-alkali production to permionic membrane system and dismantles mercury cells
- All mercury discharges cease
- 1979 - Reed Ltd., Dryden assets purchased by Great Lakes Forest Products Ltd.

PRODUCTION OUTPUT: 1979 figures showed the mill produced 150,000 metric tons of bleached and unbleached pulp and 65,000 metric tons of fine and kraft paper.

EFFLUENT FLOW RATE: Effluent is discharged to river at a rate of 27 MGD, containing treated woodroom wastes (chlor-alkali plant waste while in production), kraft mill wastes and paper mill wastes.

CHEMISTRY:

pH	=	5.8 ppm	Total Phosphorus	=	0.37 ppm
BOD ₅	=	270 ppm	Sol. Phosphorus	=	0.06 ppm
COD ₅	=	1125 ppm	Ammonia N	=	0.44 ppm
Total Solids	=	1073 ppm	Total Kjeldahl N	=	2.2 ppm
Suspended Solids	=	140 ppm	Nitrate N	=	0.03 ppm
Dissolved Solids	=	933 ppm	Nitrite N	=	0.07 ppm
Sodium	=	170 ppm	An	=	0.03 ppm

COMMENTS: The main form of contaminant released from this mill was mercury. It has ceased discharging Hg since conversion of its plant in 1975. MOE is still actively monitoring the mill and receiving water. Clarifier was installed and suspended solids loadings dropped from 21 tons/day to 8 tons/day.

NAME: GREAT LAKES FOREST PRODUCTS LIMITED

LOCATION: Thunder Bay (NW)

RECEIVING WATER: Kam River

BACKGROUND HISTORY:

- 1919 - Company organized
- 1919-1923 - Acquires timer limits, mill sited and negotiates for hydro-electric power
- 1923 - Groundwood mill construction
- 1924 - Operation begins
- 1927 - Begin construction of newsprint mill
- 1936 - Company re-organized
- 1946-48 - 2 paper machines modernized to increase capacity from 100,000 to 156,000 tons per annum
- 1955-58 - 2 more paper mills installed, increasing production 425,000 tons/year
- 1963 - The existing sulfite mill was converted from a calcium base cooking liquor to a magnesium base. Produces 20,000 tons of surplus unbleached sulfite pulp for sale
- 1966 - new bleached sulphate plant with a 200,000 ton per annum capacity of bleached and unbleached kraft pulp completed and commenced operation
- 1977 - MOE issues a Requirement and Direction which will be 1980 considerably improve effluents

PRODUCTION OUTPUT: The company is rated to produce 402,000 metric tons/year of chemical pulp
370,000 metric tons/year of newsprint
71,000 metric tons/year of waferboard
19,000,000 fbm/year of stud lumber

EFFLUENT FLOW RATE: All effluents are handled through different clarifiers but are combined for a final outflow.

CHEMISTRY:	BOD ₅	92,500 kilograms per day
	Suspended Solids	21,780 kilograms per day
	Dissolved Solids	405,000 Kilograms per day

COMMENTS:

NAME: HALEY INDUSTRIES LTD.

LOCATION: Haley Station, Ontario, Ross Twp., SE Region

RECEIVING WATER: Small Creek to Ottawa River

BACKGROUND HISTORY: Plant manufactures magnesium and aluminum castings. Pickling room effluent treatment was inadequate in the 1960's. Present treatment facilities were approved by OWRC and installed in 1970. Treatment facilities include:

- 1) Reducing tank to convert hexavalent chromium from hexavalent to the trivalent state with the use of sodium metabisuophite and pH control with the addition of sulphuric acid.
- 2) Neutralization tank to precipitate the trivalent chromium as chromium hydroxide and a pH controller to regulate the addition of lime.
- 3) A third tank to act as a clarifier.

PRODUCTION OUTPUT: Average Tonnage of magnesium poured per day - 0.75 tons

EFFLUENT FLOW RATE: Approximately 2500L per hour

CHEMISTRY:

Sr	-	0.24	Total Solids	-	500
Li	-	0.02	Susp. Solids	-	15
Al	-	1.4	pH	-	6.5
Fe	-	2.3	Nitrate	-	3.1
V	-	0.10	Nitrite	-	0.30
T	-	0.1	Ammonia	-	2.8
Cr	-	3.8	Total Kjeldahl	-	4.5
Cd	-	0.01	Sulphate	-	110
Pb	-	0.15	Phosphate	-	0.1
ZN	-	0.39	Magnesium	-	59
Cu	-	0.08	COD	-	170
MN	-	0.25			
AS	-	0.015			

NAME: HOUDAILLE PLATING

LOCATION: Oshawa (C)

RECEIVING WATER: Oshawa Creek to Lake Ontario

BACKGROUND HISTORY: Metal fabricating and finishing started in 1930

PRODUCTION OUTPUT: 91,000 ft² of semi bright Nickel plating
91,000 ft² of semi bright Nickel plating
86,000 ft² of chromium plating

EFFLUENT FLOW RATE: 72,000,000 MIGD

CHEMISTRY: Metal pickeling, surface treating plus nickel and chromium plating

COMMENTS: Two major flows from the plant were examined. Spent pickle liquor is pumped to nearby tannery to neutralize its effluents. The lethal effluent contained substantial amounts of organic material and iron.

NAME: IMPERIAL OIL LTD. (Refining)

LOCATION: Sarnia (SW)

RECEIVING WATER: St. Clair River

BACKGROUND HISTORY: Oil refining started on this site before the turn of the century. Since then the plant has expanded to its present size and complexity.

PRODUCTION OUTPUT: 140,000 barrels of crude oil per day throughout is converted to about 600 different products

EFFLUENT FLOW RATE:

#3 Seperator	15 MIGD
#5 Seperator	12 MIGD
#9 Seperator	12 MIGD
#11 Seperator	12 MIGD
Bio Oxidation Plant	15 MIGD
	66 MIGD

CHEMISTRY: Basic oil refining plus extensive hydrocarbon feed stock preparation and modification. Some phenolic compounds are found in the Bio Oxidation plant effluent. The seperators basically treat clean cooling water which can occasionally contain high concentrations of hydrocarbons.

COMMENTS: Since 1967 the company has spent more than \$25 million in air and water pollution control measures.

NAME: INCO - Copper Cliff Creek

LOCATION: Sudbury (NE)

RECEIVING WATER: Kelly Lake and Spanish River system

BACKGROUND HISTORY: 1975 - treatment plant goes into service

PRODUCTION OUTPUT: N/A

EFFLUENT FLOW RATE: Flow through the treatment plant averages at $90400\text{m}^3/\text{d}$. It maximum capability is $60 \times 10^6 \text{ g.p.d.}$

CHEMISTRY: 1979 avg.

pH	-	10.0
SS	-	10.0
NH ₄	-	17.0
Ni	-	0.7

COMMENTS: Investigations initiates as the plant treats effluent from the iron ore plant, the Clarabell Mill, the Nickel refinery, CIL #1 plant as well as runoff from the main trailings area, smelter pond overflow and surface drainage from the smelter complex. Regional MOE staff consider the plant to be operating to specifications. All the creek water is clarified and sludge removed prior to discharges.

NAME: INCO

LOCATION: Levack (NE)

RECEIVING WATER: Moose Creek initially which enters the Spanish River

BACKGROUND HISTORY: 1900 - Milling commences
1976 - MOE bioassay for toxicity
1977 - MOE bioassay for toxicity
1978 - shut down of operations

PRODUCTION OUTPUT: N/A. Totally recycled to process, some overflow to creek

EFFLUENT FLOW RATE: 1600m³/d. enter the creek from the tailings area with decant stretcher

CHEMISTRY: 1979 avg. Ni = 0.5
 pH = 7.1
 S.S. = 7.0
 NH₃ as N = 2.4

COMMENTS: Bioassay results are 96 hr LC₅₀ 10%.

NAME: INCO - Nolin Creek

LOCATION: Sudbury (NE)

RECEIVING WATER: Kelly Lake

BACKGROUND HISTORY: 1973 - treatment plant opens

PRODUCTION OUTPUT: N/A

EFFLUENT FLOW RATE: 13320m³d. of water pass through creek to Kelly Lake

CHEMISTRY: 1979 avg.

pH	=	11.0
Ni	=	0.7
NH ₃ as N	=	9.1
SS	=	13

COMMENTS: Investigations initiated to obtain a comprehensive overview of all streams passing through mining properties. Sources of contamination in this stream are mainly surface run-off. High values occur during by-pass phases of the treatment plant.

NAME: INCO METAL CO. LTD.,

LOCATION: Shebandowan (NW)

RECEIVING WATER: Gold Creek to Matawin River

BACKGROUND HISTORY: Approx. 1967 - Begins operation

PRODUCTION OUTPUT: 1700 metric tons/day of nickel/copper concentrate

EFFLUENT FLOW RATE: Tailings pond used for settling solids

CHEMISTRY:

Suspended solids	- 14.3 kg/day
Copper	- 0.014 kg/day
Nickel	- 0.24 kg/day
Lead	- 0.01 kg/day
Zinc	- 0.04 kg/day
Iron	- 0.64 kg/day

COMMENTS:

NAME: INDUSTRIAL GRAIN PRODUCTS LTD.

LOCATION: Thunder Bay (NW)

RECEIVING WATER: Kaministiquia River to L. Superior

BACKGROUND HISTORY: 1948 - Company begins operation
1970 - DeLaval spray dryer installed; reduced BOD and solids with a 4% increase in product recovery.
1973 - Attempts to reduce water consumption, leading to a 45% reduction in effluent
1974-77 - Continuing attempts by company to reduce pollution load
1978 - MOE will issue a Requirement and Directive

PRODUCTION OUTPUT: Wheat-starch and gluten plant producing 270,000 lbs. of flour per day

EFFLUENT FLOW RATE: 215,200 gallons of effluent per day

CHEMISTRY: 17,600 lbs. of solids/day
15,700 lbs. of BOD/day

COMMENTS:

NAME: KAM-KOTIA MINES LTD. now ROBISON MINES LTD.

LOCATION: Timmins

RECEIVING WATER: Kamiskotia River

BACKGROUND HISTORY: Copper and zinc concentrates were produced on this property through the 1930 - 1940's.

Ceased production 1972, final mill production 1800 Ton/d.

In 1975 property became owned by Robison Mines Ltd. A Control Order issued on Kam-Kotia Mines Ltd. in 1978 was appealed, and MOE directed to re-issue order to Robison Mines Ltd.

Present status: Control Order to be issued to Robison Mines Ltd. in 1980.

PRODUCTION OUTPUT: Nil - property abandoned

EFFLUENT FLOW RATE: 100 I gal/min. (natural drainage measured Oct. 1978).

CHEMISTRY:

<u>Susp. Solid</u> (ppm)	<u>pH</u>	<u>Zn</u> (ppm)	<u>Fe</u> (ppm)	<u>Cu</u> (ppm)	<u>As</u> (ppm)
50	2.5	6.5	560	9.0	0.75

COMMENTS:

NAME: KIMBERLEY-CLARK OF CANADA LTD.

LOCATION: St. Catherines (WC)

RECEIVING WATER: Old Welland Canal

BACKGROUND HISTORY: Paper and paper products have been produced at this site since the early part of the century.

PRODUCTION OUTPUT: 100 ADT/D 24-hours per day, 7 days/week

EFFLUENT FLOW RATE: 2.4 MIGD

CHEMISTRY: Tissue mill uses processes of repulping, cleaning refining and sheet formation
1300 tons/mo - purchased pulp
1600 tons/mo - waste paper

Major contaminants include solids, BOD, COD
BOD₅ - 340 kg/day
Suspended Solids - 81 kg/day

COMMENTS: A program has been submitted for the control of BOD. The plant is presently under a control order to bring its effluent into compliance with Ministry guidelines.

NAME: KIMBERLEY-CLARK OF CANADA LTD.

LOCATION: Terrace Bay (NW)

RECEIVING WATER: Black Bird Creek to Moberly Bay (L. Superior)

BACKGROUND HISTORY: 1973-77 - \$240 expansion programme
Presently under a Program Approval requiring
that by June 1, 1978 the old mill will reduce
production to 350 tons/day

PRODUCTION OUTPUT: 435 tons/day Kraft Pulp

EFFLUENT FLOW RATE: Not available

CHEMISTRY: BOD₅ = 38,232 kg/day
Suspended Solids = 8,500 kg/day

COMMENTS: During 1978/79 a report will be prepared to
determine the water quality of the receiving
water. This report will be assessed for the
need of a secondary treatment system.

When the new mill becomes fully operational,
the total output of the new and old mill be
approximately 1,250 tons/day. 50% of this
output should be obtained by June, 1978.

NAME: LECOURS LUMBER COMPANY

LOCATION: Calstock, Ontario

RECEIVING WATER: Constance Lake

BACKGROUND HISTORY: This plant has been in operation since the early 1960's. It is an integrated sawmill producing dimension lumber, wood chips and shavings. The plant processes about 80,000 cords of spruce and jackpine per year.

Effluents are generated from hot ponds. These ponds soak logs prior to debarking. The pond is a closed system with no routine discharge.

Toxicity tests were carried out on the effluent during the fall of 1976.

PRODUCTION OUTPUT:

EFFLUENT FLOW RATE: No applicable

CHEMISTRY: Influent Phenols 340 PPB
Influent Tannins 25 mg/L

COMMENTS:

5-68

NAME: Lindsay STP

LOCATION: Lindsay, Ontario

RECEIVING WATER: Scugog River

BACKGROUND HISTORY: Waste stabilization ponds with aeration all
total 118 areas. Rated capacity of 3.0 MIGD.

PRODUCTION OUTPUT:

EFFLUENT FLOW RATE: 2.66 MIGD (1979)

CHEMISTRY:	Effluent:	BOD	-	10.71
		Susp. Solids	-	28.06
		TKN	-	19.10
		Total P	-	3.71

COMMENTS:

5-69

NAME: LUSTER DIVISION - National Hardware
Specialities Ltd.

LOCATION: Wallaceburg (SW)

RECEIVING WATER: Municipal sewer to Sydenham River

BACKGROUND HISTORY: Plant started production 1946

PRODUCTION OUTPUT:

Electro cleaning	-	10,000 ft ² /day
Co plating - cyanide	-	2000 ft ² /day
- acid	-	8500 ft ² /day
Nickel - bright	-	10,000 ft ² /day
- semi bright	-	4000 ft ² /day
Chromium	-	10,000 ft ² /day

EFFLUENT FLOW RATE: 38,400 IGPD

CHEMISTRY: Electro cleaning plus copper, bright and
semi-bright nickel and chromium plating.
Effluent contains traces of Cu, Ni, Cr, Zn

COMMENTS:

NAME: MONSANTO CANADA IWC

LOCATION: Sarnia (SW)

RECEIVING WATER: Cooling water goes to the township ditch and the St. Clair River. Contaminated process waste goes to the City of Sarnia Sewage Treatment Plant and then to the river.

BACKGROUND HISTORY: Initially the plant was built and run as part of the Polysar complex. It was subsequently shutdown, and sold to Monsanto in 1973, who reopened the plant and are presently running it.

PRODUCTION OUTPUT: Approximately 30,000,000 lbs/year

EFFLUENT FLOW RATE: 216,000 IGPD to sanitary sewer

CHEMISTRY: Manufacturers Lustran A.B.S. resin, (acrylonitrile, butadiene, styrene)

COMMENTS:

NAME: NORANDA MINES LTD., Geco Division

LOCATION: Manitouwadge (NW)

RECEIVING WATER: Big Mose Lake to Black R. System

BACKGROUND HISTORY: 1957 - Mine begins production at 3,300 tons/day
1975 - Waste Water Treatment Plant installed
1976 - Waste Water Treatment plant goes into operation

PRODUCTION OUTPUT: Present production is 5,000 tons of ore/day. Copper, lead and zinc concentrates are produced.

EFFLUENT FLOW RATE: Mine water and mill waste are pumped to a 500 acre tailings pond. Water is decanted from the tailings pond to provide 95% of water requirements of mill and 50% of the water requirements. All seepages from the tailings pond are channelled to a W.W.T.P. which has facilities for lime neutralization, aeration to oxidize ferrous iron to ferric iron, polymer addition to promote flocculation and clarification by means of an Eimco 75 foot diameter reactor clarifier.

No average flow rates are available as they are dependent on specific weather conditions.

CHEMISTRY: Decant run-off water
pH = 3-5 Cu = 1 ppm
Suspended Solids = 9.6 ppm Zn = 5.4 ppm
Dissolved Solids = 2,300 ppm Fe = 3.9 ppm

Waste Water Treatment Plant discharge:
pH = 7.2 Cu = 0.08 ppm
Suspended Solids = 6.3 ppm Zn = 1.2 ppm
Dissolved Solids = 3,300 ppm Fe = 1.1 ppm

COMMENTS:

NAME: ONTARIO PAPER CO. LTD.

LOCATION: Thorold (WC)

RECEIVING WATER: Schriener's Creek to Old Welland Canal

BACKGROUND HISTORY: The company was incorporated in 1912 with construction of the Thorold Mill completed by 1913.

PRODUCTION OUTPUT: 280 ADT/D Sulphite pulp
657 ADT/D Total production
900,000 Imp. gallon/year - Alcohol
5,600,000 lbs/year vaillin

EFFLUENT FLOW RATE: 30 MIGD

CHEMISTRY: An integrated newsprint mill using a sodium based sulphite pulping process and a groundwood mill. The plant also produces ethanol, vanillin and salt cake (sodium sulphate) which is sold to various kraft pulp mills for liquor make-up. Bleaching is done with boral (NaCO_2) and Sodium hydrosulphite ($\text{NA}_2 \text{S}_2 \text{O}_4$). Wood furnish is mainly pine and balsam.

Major contaminants in the effluent include
Solids, TOC, COD colour and foam production
BOD₅ - 20,250 kg/day
Suspended Solids - 9,000 kg/day

COMMENTS: The company is presently under a control order to bring its effluent into compliance with Ministry guidelines.

NAME: PARIS WATER POLLUTION CONTROL PLANT

LOCATION: Paris - West Central Region

RECEIVING WATER: Grand River

BACKGROUND HISTORY: The plant is approximately 20 years old. The final effluent is periodically in excess of MOE Guidelines due mainly to industrial wastes. Difficulty maintaining adequate DO levels is experienced, due to the strength of the wastes and hydraulic loads, which result in insufficient retention time in the aeration section.

Grease, fats, dyes and chemicals are the major contributors to the operating difficulties. They are discharged by chicken processors and Penman's Textile Company.

PRODUCTION OUTPUT: Design: 500,000 IGPD

EFFLUENT FLOW RATE: Daily average flow - 380,000 IGPD

CHEMISTRY: The plant is an extended aeration facility with two 3-cell aeration tanks in series.

COMMENTS: There has been a marked improvement in the influent quality of the plant within the last six months. Additional measures are being taken to further improve the quality of this influent.

NAME: PENMAN'S

LOCATION: Paris - West Central Region

RECEIVING WATER: Paris Water Pollution Control Plant

BACKGROUND HISTORY: The effluent from the Company is 50% of the water pollution control plant capacity. In addition, lint discharge causes problems with the aerating cones, as do peak flows in excess of 1 million gallons per day. This problem has now been corrected by equalization tanks.

Discoloration due to dyes and occasionally high BOD and COD levels adversely affect the operation of the plant.

Fish toxicity testing has been performed in the past.

PRODUCTION OUTPUT:

EFFLUENT FLOW RATE: 250,000 IGPD.

CHEMISTRY: The raw materials used comprise acids and dyes and chemicals filling three pages.

COMMENTS: The Company is presently considering various methods to get its effluent in compliance with the Sewer Use By-Law.

NAME: PETROSAR INC.

LOCATION: Moore Township (SW)

RECEIVING WATER: St. Clair R.

BACKGROUND HISTORY: The company was formed in 1974 and is owned by Dupont, Polysar, and Union Carbide. Production started in late 1977.

PRODUCTION OUTPUT:

Polymer grade ethylene	1 billion lbs/yr
chemical grade propylene	700 million lbs/yr
butadiene-isobutylene	
butylene mixture	500 million lbs/yr
benzene	350 million lbs/yr
toluene, xylene	280 million lbs/yr
gasoline	8000 barrels/day
#2 fuel	31,000 barrels/day
residual fuel	70,000 barrels/day
synthetic natural gas	33 million ft ³ /day
L.P.G.	3500 barrels/day
crude feed rate	170,000 barrels/day

EFFLUENT FLOW RATE: 5 MIGD

CHEMISTRY: Petrosar includes a crude oil processing unit, an olefin processing unit, a gasoline treating unit and an aromatics unit.

COMMENTS: Advanced technology plus extensive use of air cooling and cooling towers results in a small effluent from this very large plant.

NAME: POLYSAR CORPORATION LTD.

LOCATION: Sarnia (SW)

RECEIVING WATER: St. Clair R.

BACKGROUND HISTORY: The Polymer Corporation was created in 1942 as a consortium of major chemical and petroleum companies. In 1972 Polysar was acquired by the Canada Development Corporation.

PRODUCTION OUTPUT:

Stereoscopic polymers	50,500,000 lbs/yr
Styrene	200,000,000 lbs/yr
Co-polymers	250,000,000 lbs/yr
Butyl rubber	97,000,000 lbs/yr
Latex rubber	90,000,000 lbs/yr

EFFLUENT FLOW RATE:

Township ditch	45.0 MIGD
54" Sewer	10.2
Stereo A.P.I.	0.8
66" Sewer	50.0
72" Sewer	3.5
	<u>119.5</u>

CHEMISTRY: The plant manufactures a variety of synthetic rubbers using styrene, isoprene, butadiene etc. Major contaminants in the effluent include phenolics, chlorinated compounds, aliphatics, benzene, isoprene, tertiary butyl alcohol.

COMMENTS: In 1977 a control order was applied against the company. Work is progressing well and appears to be on schedule.

NAME: REICHHOLD CHEMICALS LTD.

LOCATION: Thunder Bay (NW)

RECEIVING WATER: Kaministiquia River to Lake Superior

BACKGROUND HISTORY: 1976 - Begins operation

PRODUCTION OUTPUT: Company produces urea formaldehyde resin used in the manufacture of particle boards.

EFFLUENT FLOW RATE: Operates an activated sludge plant to treat the formaldehyde.

CHEMISTRY:

BOD ₅	-	3.1 kg/day
Suspended Solids	-	14.4 kg/day
Dissolved Solids	-	119 kg/day

COMMENTS:

NAME: RIO ALGOM LIMITED - Milliken - Stanleigh Properties (Crotch Lake)

LOCATION: 1 mile east of Elliot Lake (NE)

RECEIVING WATER: Serpent River System, Crotch Lake - McCabe L.

BACKGROUND HISTORY: 1958 - begin conventional operation
1960-64 - bacterial leaching operation
1964 - operations cease
1967 - MOE monitoring programme initiated
1973 - treatment of tailings area initiated
1977 - control order requiring tailings stabilization

PRODUCTION OUTPUT: N/A

EFFLUENT FLOW RATE: The point of discharge sampled for bioassay was designated CL-4, Crotch Lake outlet. There is no information presently available on rate of flow.

CHEMISTRY: pH = 7
TDS = 250 mg/L
Radium = 8 pCi/l
low metals
D.S. 60% of TDS as SO₄
Alk. 14

COMMENTS: Water quality acceptable at sampling location, however, at tailings site (other 1/2 of lake) the situation is poor

NAME: RIO ALGOM LIMITED - Nordic (Lacnor) Property

LOCATION: 2 miles south of Elliott Lake on Hwy 108 (NE)

RECEIVING WATER: Serpent River Basin

BACKGROUND HISTORY: 1957-68 - Conventional mining activity
 1968 - Conventional mining ceased
 - Leaching programme
 1969 - Drying operation for Quirke slurry initiated
 1971 - Treatment of tailings area initiated
 1977 - Control order issued, requiring stabilization of tailings area, and improvement to dams

PRODUCTION OUTPUT: N/A
 This operation is approximately 10% active. It's function is to dry the yellow slurry of Quirke property to saleable yellow cake.

EFFLUENT FLOW RATE: The point of effluent discharge from company property was designated as N-19 (North Nordic Lake effluent). Toxicity samples were taken from station N-12 (Buckles Creek at Hwy. 108). The estimated rate of discharge from the property is 750 IGPM. Creek flow at station N-12 is 1500 IGPM.

CHEMISTRY:

N-19 station		N-12 station	
pH	= 7.5	pH	= 6.5
TDS	= 1300 mg/L	TDS	= 800 mg/L
NO ₃	= 6 mg/L	RA	= 5 pCi/l
NH ₃	= 8 mg/L		
Ra	= 3 pCi/l		

COMMENTS: Downstream levels of Ra higher than just after treatment, as leaching occurs from the various other operation areas the stream passes through. By-passing operations have been successful to date.

NAME: RIO ALGOM LIMITED - Pronto Property

LOCATION: 5 miles west of intersection of Hwy 108 & Hwy 17 (NE)

RECEIVING WATER: Pronto Creek and northshore of Lake Huron

BACKGROUND HISTORY: 1955-1960 - mining and milling of uranium
1960-70 - milling of copper
1970 - production stopped
1970-77 - MOE monitoring programme
1977 - Stabilization programme,
improve treatment facility

PRODUCTION OUTPUT: N/A

EFFLUENT FLOW RATE: The point of effluent discharge from company property was designated as PR-4 (outlet of settling pond below treatment plant). Toxicity samples were taken at Station PR-1 (treated effluent at Hwy 17, downstream of PR-4).

CHEMISTRY: Fe = 0.1-3 mg/L
Other Metals = 0k
Suphate = 300-600 mg/L
Radium = 3-5 pCi/l

COMMENTS:

NAME: RIO ALGOM LIMITED - Panel Property (Strike Lake)

LOCATION: North shore of Quirke Lake (NE)

RECEIVING WATER: Serpent River basin via Rochester Creek

BACKGROUND HISTORY: 1958 - operations begin
1961 - operations cease
1974 - tailings area stabilization begins
1976 - presently being prepared for re-activation

PRODUCTION OUTPUT: N/A

EFFLUENT FLOW RATE: Two samples for bioassay were obtained for this property. One sample was taken from No. 3 Beaver Pond outlet, a second sample was obtained at station P-2, the Strike Lake outlet. There is no available data on flow rates at either of these sites.

CHEMISTRY:

No. 3 Beaver Pond Outlet	Strike Lake Outlet (P-2)
pH = 3	ph 4.5
TDS = 1500 mg/L	TDS 400 mg/L
Ra = 15 pCi/l	Fe 3 mg/L
	Ra 8 pCi/L

COMMENTS: The reactivation entails pumping of water from mine. This water is being processed for radium recovery.

NAME: RIO ALGOM LIMITED - Quirke Property

LOCATION: 12 miles north of Elliot Lake on Hwy. 108 (NE)

RECEIVING WATER: Serpent River

BACKGROUND HISTORY: 1956-61 - in operation
1961-67 - closed down
1967 - operations resume. MOE
monitoring programmes initiated.
1977 - control order issued requiring
additional neutralization at
the mill, also near final
discharge

PRODUCTION OUTPUT: This operation produces yellow cake (ammonium
diurate). Output figures are unavailable

EFFLUENT FLOW RATE: The point of discharge sampled for bioassays
was designated as Q3 - Quirke, tailings after
treatment. The rate of flow is 3800 IGPM

CHEMISTRY: pH = 7.5
T.D.S. = 2500 mg/L
SO₄ = 1300 mg/L
NO₃ = 75 mg/L

COMMENTS:

NAME: P. L. ROBERTSON MFG. CO.

LOCATION: Milton (C)

RECEIVING WATER: Sixteen Mile Creek

BACKGROUND HISTORY: Production started in 1908. At full production the plant employs 450 people

PRODUCTION OUTPUT: Maximum of 13,000 tons of steel per year.
200 tons of brass and steel per year.

EFFLUENT FLOW RATE: 475,000 I.G.P.D.

CHEMISTRY: Metal cleaning and treating plus Cu, Ni, Cr, Zn, Cd and brass plating. Effluent contains traces of Ni, Cu, Zn, Cr and Fe.

COMMENTS:

NAME: SHELL CANADA LTD.

LOCATION: Moore Township (SW)

RECEIVING WATER: St. Clair River

BACKGROUND HISTORY: The refinery went into operation in 1952. Since then production has expanded and a petrochemical plant has been added to produce polypropylene and isopropyl alcohol.

PRODUCTION OUTPUT: 86,000 barrels of crude through-put per day

EFFLUENT FLOW RATE: 49 MIGD

CHEMISTRY: Basic oil refinery plus a petrochemical plant. Products include propane, butane, butylenes, liquid sulphur, benzene, toluene, xylene. Methylene chloride has been detected in the refinery waste water

COMMENTS: Over the past several years \$6 million has been spent on air and water pollution control measures

NAME: SHELL CANADA LTD.

LOCATION: Oakville, Ontario (C)

RECEIVING WATER: Lake Ontario

BACKGROUND HISTORY: Production started in late 1963

PRODUCTION OUTPUT: 55000 barrels/day throughput

EFFLUENT FLOW RATE: 600 gpm

CHEMISTRY: Basic oil refinery producing a full range of petrochemical products

COMMENTS: Effluent treatment consists of A.P.I. separators, a dissolved air floatation tank, activated sludge biotreaters and two equalizing ponds

NAME: SHERMAN MINE

LOCATION: Temagami (North Bay) (NE)

RECEIVING WATER: Tetapaga River

BACKGROUND HISTORY:

- 1967 - O.W.R.C. approvals #67-C-7 covering treatment and impounding of mill slurry issued also E.P.A. C of A #1166.275 issued for air emission control
- 1968 (June - Monthly water sampling programme commenced at Tetapaga weir, 72" culvert, Vermillion main dam, and Iron Creek for pH, turbidity, color (APHA), hardness, SS, DS, TS and iron.
- 1969 (Oct) - Exhaust stock dust samples analyzed for iron, silicates, sulphur and particulate sizing.
- 1970 (Oct) - Compliance inspection made for issued E.P.A. certificate of approval
- phytoplankton survey by O.W.R.C. indicated small populations
- 1971 - Alum and super floc added at Vermillion decant
- Link Lake filter dam completed
- South pit operation has ceased and pit being flooded.
- 1972 - Permit to transfer water from Tetapaga to Turtle Lake was applied for by Wm. Milne & Son, Temagami
- Green discolouration noted in Vermillion Basin.
- Unsubstantiated complaint received regarding particulate fallout on Lake Temagami - N.E. arm
- 1972 Sept - Meeting with Company, Air Management and Phytotoxicology personnel regarding - off-property SO₂ and particulate emissions from kiln and blasting operations. Company to establish on-property stations to monitor sulphation and particulate contamination.
- 1973 - MOE biological survey of receiving water
- company to prepare and submit 5 year mining programme
- company implemented on-property stations
- 1974 Jan.- MOE sampling snow at 6 locations on a monthly basis: locations:
2 - mine property
2 - Sherman mine road
1 - Temagami, N.E. arm
1 - Temagami, access road

- Company submits 10 year mining schedule
 - Company re-evaluating tailings basin holding capacity, is to submit expansion plans when completed
- July - MOE, phytotoxicologist, soil and vegetation survey
- Oct. - (1) C of A issued for A.A.F. electrostatic precipitation for control of welding fumes
(2) Investigations disclosed leaching of sulphates from road bed constructed partially of sulphide rich waste rock
- 1975 - Complaint re black particulate impingement on snow N.E. arm Lake Temagami
- Several other complaints re black particulates and black oil water at mouth of Tetapaga R.
- MOE air survey
- C of A #4-074-75-006 issued to company for the dewatering of the south pit
- 1976 - MOE survey of Tetapaga R.
- MOE bioassay shows Tetapaga to be non lethal
- Dam raised by Company
- Company requested to investigate and submit corrective action to eliminate the contamination of the Tetapaga R.
- 1977 - Company appoints full time Environmental Control Engineer
- Bioassay test by MOE
- PRODUCTION OUTPUT: This operation produces 3260 long tons/week of Iron ore pellets
- EFFLUENT FLOW RATE: 2 thirty inch culverts discharge a total of 120,000 gpd to the Tetapaga River
- CHEMISTRY:
- | | | | | |
|-------------------|--------------|-------------|--------------------------------|--------|
| | | | Air | |
| | | | % by wt. of extractables | |
| Cu = <u>Water</u> | pH | = 6.5 | Fe ₃ O ₄ | 93.9% |
| Ni = 0.1 | hardness | = 240 ppm | SiO ₂ | 5.2% |
| Zn = 0.5 | S.S. | = 9 ppm | Al ₂ O ₃ | 0.36% |
| Co = 0.1 | D.S. | = 220 ppm | Phosphours | 0.019% |
| As = 0.01 | Iron | = 0.20 ppm | Sulfur | 0.017% |
| | Turbidity | = 1.7 (FTU) | CaO | 0.18% |
| | Conductivity | = 250 | MgO | 0.28% |
| | Sulfates | = 105 ppm | | |
- COMMENTS: This mine is an active contributor to pollution in the area and should be monitored continuously. A more definitive toxicity survey should be conducted.

NAME: SPRUCE FALLS POWER & PAPER

LOCATION: Kapuskasing (NE)

RECEIVING WATER: Kapuskasing River

BACKGROUND HISTORY: 1920 - Pulp mill constructed
- power dam
- calcium based sulfite mill
- production 115TPD
1928 - New company formed and expansion of
existing operation begun
- 55,000 KW power dam at Smoky Falls
- production increased to 650 TPD
1929 - Expansion completed
1932-35 - Production cut-back
1941 - Sulfite drier constructed
1959 - Bleaching added
1964 - Magnefite mill constructed
1966 - Woodchip producing plant
1971 - #5 paper machine installed
1970-71 - Primary treatment facilities
constructed
1973 - Stud mill construction
1976 - Construction of TMP plant

PRODUCTION OUTPUT: 910 ADT newprint
69 ADT market sulfite

EFFLUENT FLOW RATE: Total effluent discharge to the Kapuskasing
River of 40×10^6 gal/day.

CHEMISTRY: See page 89

COMMENTS: A comprehensive study on the TMP process was
conducted by MOE during the summer of 1977.
This report will be made available under
separate cover.

CHEMISTRY:

	Chip Washer	4th Stage Cleaner	TMP stock (bleach)	TMP stock (no bleach)
BOD ₅	1533 mg/L (8 lbs/ton)	995 mg/L (2.8 lb/ton)	592 mg/L (32.9 lb/ton)	540 mg/L (30.1 lb/ton)
D.S.	2390 mg/L (12.5 lb/ton)	1634 mg/L (4.6 lb/ton)	1035 mg/L (57.5 lb/ton)	945 mg/L (52.6 lb/ton)
S.S.	1163 mg/L (6.1 lb/ton)	9373 mg/L (26.6 lb/ton)	-	-
pH			4.7	4.9
Abietic	82.9 mg/L (75%)	35 mg/L (75%)		
Dehydrabietic	11.9 mg/L (11%)	2.1 mg/L (5%)		
Levopimaric	8.5 mg/L (8%)	6.8 mg/L (15%)		
Isopimaric	4%)			
Sardaraccopimaric	1%) 100 lbs/day			
Pimaric	1%)			

NAME: STEEL COMPANY OF CANADA LTD. (Stelco)

LOCATION: Hamilton (WC)

RECEIVING WATER: Burlington Bay

BACKGROUND HISTORY: The company was formed in the 1920's from several smaller ones. Initially there was only 1 blast furnace and subsequently 3 more were added. The initial furnace is now out of operation. There are 5 coke ovens, 3 of which are from the original installation. During the early 1960's #3 open hearth shop was converted to an oxygen lancing steel furnaces. 1971-72 saw the construction of a basic oxygen furnace for steel production.

PRODUCTION OUTPUT: 5.4 million ingot tons/year of raw steel; mainly rod, plate and structural forms

EFFLUENT FLOW RATE:

West Side open cut	50.4 MIGD
North trunk Sewer	60
#3 open hearth cooling water	52.1
East Side Open cut	95.2
North Outfall	16.1
	<u>263.8</u> MIGD

CHEMISTRY: Basic iron and steel plant plus 3 electrolytic tinning lines, 3 pickeling lines, 3 galvanizing lines

Major contaminants:

West side open cut	-	NH ₃ HCN phenolics
North Trunk Sewer	-	NH ₃ HCN phenolics
#3 Open Hearth	-	cooling water
East side open cut	-	oils, iron, solids, phosphorus
North Outfall	-	phenols, oils

COMMENTS: East side filtration plant - stage two - was completed in November 1979 and has reduced iron and oil discharges. The company is to modify the by product final coolers to eliminate direct discharge of HCN, phenolics and NH₃.

The company has installed recirculating systems for blast furnace gas cleaning, this has reduced loadings of Fe, SS, HCN and Zn. Blow down from these systems will require final treatment.

NAME: SUN OIL CO. LTD

LOCATION: Sarnia (Corunna) (SW)

BACKGROUND HISTORY: Plant designed and built in 1952. Production started in 1953 on 15,000 barrels/day. In 1967-1969 production increased to 39,000 barrels/day. In 1976 a \$27 million petro chemical plant was added.

PRODUCTION OUTPUT: 90,000 barrels/day of crude through-put. Various petroleum fuels (gasoline diesel oil etc) plus sulphur and assorted petrochemicals

EFFLUENT FLOW RATE: 15 MIGD

CHEMISTRY: The Refinery produces heavy fuel oil, light fuel oil, kerosene, diesel oil, gasoline, aviatio fuel and LPG.

The refinery waste can contain carbon tetrachloride, methylene chloride, chloroform

COMMENTS:

NAME: TRANSPARENT CELLULOSE FILM OF CANADA LIMITED
(T.C.F.)

LOCATION: Cornwall (SE)

RECEIVING WATER: St. Lawrence River

BACKGROUND HISTORY: 1977 - Control order issued requiring
reduction in BOD₅ and suspended
solids loadings as well as the
installation of an extended diffuser
outfall

PRODUCTION OUTPUT: cellophane

EFFLUENT FLOW RATE: Courtaulds utilizes the TCF sewer system for
acid, storm and sulfide effluent. TCF effluent
is the majority of the discharge, except in
the acid sewer where they are about equal.

CHEMISTRY: Acid effluent pH: 1-2 sulfide 15ppm
 BOD₅: high dissolved solids 9000 ppm
 Suspended solids: 80 ppm

 Sulfide effluent pH 10
 sulfide 30-80 ppm
 DOC high

COMMENTS: September 1980 the company name was changed to
British Cellophane Ltd. (BCL)

NAME: TRICIL LTD.

LOCATION: Corunna (Sarnia) (SW)

RECEIVING WATER: Surface water drainage to St. Clair River via Talford Side Road ditch

BACKGROUND HISTORY: The facilities were originally established by Goodfellow Disposal Services. Subsequently Goodfellow was acquired by Tricil, a joint venture of Trimack Trucking Lines and Canadian Industries Ltd.

PRODUCTION OUTPUT: Nil

EFFLUENT FLOW RATE: Variable

CHEMISTRY: The company handles all types of industrial waste disposal. Disposal techniques include incineration and pit disposal. The surface runoff from the disposal site is treated and monitored before discharge to the county ditch.

COMMENTS:

5-94

NAME: UNION CARBIDE

LOCATION: Lindsay, Ontario

RECEIVING WATER:

BACKGROUND HISTORY: All effluent now to Lindsay Sewage Treatment Plant.

PRODUCTION OUTPUT:

EFFLUENT FLOW RATE:

CHEMISTRY:

COMMENTS:

NAME: UNIROYAL CHEMICAL, Division Uniroyal Ltd.

LOCATION: Elmira (WC)

RECEIVING WATER: Canagagigue Creek to Grand River

BACKGROUND HISTORY: The plant started in 1941 as a chemical production plant. Subsequently, production was diversified into rubber, rubber treating, agricultural and miscellaneous chemical products.

PRODUCTION OUTPUT: Many of the processes in this plant are run on a batch basis dependent upon market demand.

EFFLUENT FLOW RATE: 50,000 IGPD

CHEMISTRY: There are approximately 30 different chemical processes run in the Uniroyal buildings. The combined effluent from Elmira/Uniroyal may contain diethyl ether, chloroform, benzene, tetrachloroethylene, bromodichloromethane, dichlorobenzene, dimethylnitrosamine (approx. 0.2 ppm). Dimethylnitrosamine is a potent carcinogen.

COMMENTS: The effluent as discharged to the receiving water is a mixture of 400,000 IGPD sanitary sewage from the town of Elmira and 50,000 IGPD from Uniroyal.

NAME: WINDSOR BUMPER CO., Division of Gulf & Western (Canada) Ltd.

LOCATION: Windsor (SW)

RECEIVING WATER:

BACKGROUND HISTORY: Metal finishing operations started in 1955. A metal fabricating section was added in 1967. Presently 250 people are employed.

PRODUCTION OUTPUT: 40,000 ft² per day of electro cleaning and etching. Also 30,000 ft²/day of bright and semibright nickel plating and 30,000 ft²/day of chromium plating.

EFFLUENT FLOW RATE: 480,000 IGPD

CHEMISTRY: Total concentration of heavy metal (Ni, Cr, Fe, Cu, Zn) approximately 1 ppm

COMMENTS: Effluent marginally lethal. pH adjustment of effluent closer to neutrality may reduce the lethality of the effluent

5-97

NAME: WINDSOR CHROME PLATING

LOCATION: Windsor (SW)

RECEIVING WATER: Storm Sewer to Detroit River

BACKGROUND HISTORY: Production started in 1962

PRODUCTION OUTPUT: 15,000 lbs/day - electrocleaning, nickel plating, chromium plating

EFFLUENT FLOW RATE: 96,000 IGPD

CHEMISTRY: cleaning, degreasing, polishing of nichel and chromium plated auto parts. Traces of Cu, Ni, Cr in effluent.

COMMENTS: Effluent non lethal @ 100% in 96 hours

SECTION 6

BIOASSAY DATA SUMMARY SHEETS

The following tables list each Industry and each of their discharges which have been tested by a bioassay. The following information will help the reader understand the tables better:

All tests are assumed to be 96 hour static, aerated bioassays at 15°C, and using rainbow trout (Salmo gairdneri Richardson), unless otherwise stated in the comments section.

- N.L. means non-lethal at 100%, unless otherwise stated
- pH and conductivity are the parameters for the 100% sample at 15°C.
- sample date is the date the sample was collected, not the date it was tested.
- inplant sample indicates a sample taken from a discharge that combines with others before the final industry's discharge.
- LC50 range is the lethal range - the range where no nortality to total nortality was observed, with no partial mortalities.
- the LC50 is the lethal concentration of effluent required to kill 50% of the fish population over a specific period of time (e.g. 96 hours or 4 days).
- the comments section identifies whether any chemical adjustments have been made to the effluent before testing and the availability of other information which might add to the interpretation of the test.

DATA SUMMARY SHEET

COMPANY NAME and LOCATION	EFFLUENT	SAMPLE DATE M/ D/ Y	SAMPLING METHOD	TEST NO.	96-HOUR -LC 50	pH	CONDUCT- TIVITY	COMMENTS
ABITIBI-PRICE - Fort William (NW)	Mill Effluent	08/07/79	grab	79-106	77.5%	6.1	295	
		08/18/80	4hr comp.	M3-80-50	13%	4.7		
		08/25/80	4hr grab	M3-80-59	20%	4.7	250	
		08/28/80	4hr grab comp.	M3-80-65	18%	4.2	600	
	Intake Service Water)	08/07/79	grab	79-108	N.L.	6.9	141	
	Woodroom	08/07/79	grab	79-107	8.3%	4.7	330	
		08/18/80	4hr comp.	M3-80-51	5%	4.9		
		25/08/80	4hr grab	M3-80-60	7%	4.9	225	
		28/08/80	4hr grab comp.	M3-80-66	43%*	6.0	160	- mill was flushing lagoon with clean water
ABITIBI-PRICE - Iroquois Falls (NE)	Final	11/05/80	grab	80-206	18%	4.5	1090	
	Blowpit Discharge	08/03/76	grab	M1-76-19	<10%	4.7	2350	- 10% killed all fish in 12 hours
		08/03/76	grab	M1-76-19	<10%	4.7	2350	- unaerated 10% killed all fish in 12 hours
	Clarifier Discharger	08/03/76	grab	M1-76-18	42%	6.8	240	- LC50 range 32-56%
		08/03/76	grab	M1-76-18	42%	6.8	240	- unaerated LC50 range 32-56%

DATA SUMMARY SHEET

COMPANY NAME and LOCATION	EFFLUENT	SAMPLE DATE M/ D/ Y	SAMPLING METHOD	TEST NO.	96-HOUR -LC 50	pH	CONDUCTIVITY	COMMENTS
ABITIBI-PRICE - S.S. Marie (NE)	Main Sewer Effluent	09/13/76	grab	M1-76-33	18%	5.1	325	- unaerated
		09/13/76	grab	M1-76-33	24%	5.1	325	- LC50 range 18-32%
		07/11/77	grab	M1-77-30	26%	6.5	230	- unaerated
		07/11/77	grab	M1-77-30	<100%	6.5	230	- 100% killed all fish in 72 hrs.
ABITIBI-PRICE - Smooth Rock Falls	Foam Lagoon at plant	07/06/76	grab	M1-76-13	20%			- unaerated
		07/06/76	grab	M1-76-13	37%			
		07/20/76	grab	M1-76-15	<10%	7.5	280	- unaerated - 10% killed all fish in 33 hours
		07/20/76	grab	M1-76-15	11%	7.5	280	
		11/12/80	grab	80-207	7%	2.5	2000	
ABITIBI-PRICE - Sturgeon Falls (NE)	Back Ravine Effluent	07/27/76	grab	M1-76-16	21%			- unaerated
		07/27/76	grab	M1-76-16	70%			
	Intake (Service Water)	11/26/79	grab	79-179	N.L.	6.8	50	
	Heavy Solids Sewer	11/26/79	grab	79-183	3.5%	6.1	950	
	Floatation Clarifier Dis.	08/15/77	grab	M1-77-68	50%	6.1	390	- LC50 range 30-65%
		11/26/79	grab	79-182	45%	6.0	275	
	Uncontaminated Sewer	08/15/77	grab	M1-77-70	N.L.	6.7	95	
		11/26/79	grab	79-180	N.L.	7.0	65	
	Spent Sulfite liquor to river	08/15/79	grab	M1-77-69	<3%	5.5	8400	
		11/26/79	grab	79-181	5.4%	7.9	8000	

DATA SUMMARY SHEET

COMPANY NAME and LOCATION	EFFLUENT	SAMPLE DATE M/ D/ Y	SAMPLING METHOD	TEST NO.	96-HOUR -LC 50	pH	CONDUCTIVITY	COMMENTS
ABITIBI-PRICE - Thunder Bay (NW)	Pulp Mill Effluent	07/25/77	grab	M1-77-50	14%	4.8	525	- LC50 range 10-20%
		08/12/80	24hr comp.	M3-80-47	26%	6.6	600	
		08/26/80	24hr comp.	M3-80-63	22%	4.3		
		08/29/80	24hr comp.	M3-80-68	21%	3.9	510	
	Woodroom Effluent	08/02/77	grab	M1-77-55	14%	4.9	280	- LC50 range 10-20%
ABITIBI PROVINCIAL PAPER - Thunder Bay (NW)	Total Mill Effluent	08/02/77	grab	M1-77-54	<10%	4.6	1150	- 10% killed all fish in 48 hours
		08/07/79	grab	-79-104	>100%	5.6	180	- 10% mortality in 100%
		08/12/80	24hr comp.	M3-80-46	N.L.	6.1	150	
		08/26/80	24hr comp.	M3-89-62	N.L.	6.1	150	- 10% mortality in 100%
		08/29/80	24hr comp.	M3-80-67	>100%	6.6	245	
	Fine Paper Mill Effluent	07/25/77	grab	M1-77-51	14%	4.0	440	- LC50 range 10-20%
	Intake (Service Water)	08/07/79	grab	79-105	N.L.	7.4	265	
ABITIBI PROVINCIAL PAPER - Thorold (WC)	Clarifier decant	02/28/77	grab	77-13	39%	7.8	620	- LC50 range 30-50%
		02/28/77	grab	77-13	<50%	7.8	620	- dechlorinated - 50% killed all fish in 96 hours
		04/23/80	grab	80-56	37%	7.7	520	

DATA SUMMARY SHEET

COMPANY NAME and LOCATION	EFFLUENT	SAMPLE DATE M/ D/ Y	SAMPLING METHOD	TEST NO.	96-HOUR -LC 50	pH	CONDUCT- TIVITY	COMMENTS
AGNEW LAKE MINE - Elliot Lake (NE)	Tailings Slurry	08/22/79	grab	79-146	N.L.	8.3	2930	- unaerated
	Tailings Pond	06/10/77	grab	M1-77-17	N.L.	7.0	285	- unaerated
		06/10/77	grab	M1-77-17	N.L.	7.0	285	
		08/22/79	grab	79-124	47%	8.7	2550	- LC50 range 30-73% - unaerated
		08/22/79	grab	79-124	N.L.*	8.7	2550	- unaerated-diluted with Ministic creek water * at 30%
	Drainage Ditch (John's Creek)	09/20/76	grab	M1-76-39	N.L.	7.1	118	- unaerated
		06/03/77	grab	M1-77-12	N.L.	7.0	112	- unaerated
		06/10/77	grab	M1-77-16	N.L.	6.6	210	- unaerated
		06/10/77	grab	M1-77-16	N.L.	6.6	210	- unaerated
		08/22/79	grab	79-145	N.L.	7.0	210	- unaerated
	Ministic Creek upstream from mine	09/20/76	grab	M1-76-38	N.L.	7.0	56	- unaerated
		08/22/79	grab	79-130	N.L.	7.0	53	- unaerated
	Ministic Creek downstream of mine	06/03/77	grab	M1-77-11	N.L.	7.2	61	
AGNICO EAGLE - Glen Lake (NE)	Glen Lake Discharge	07/20/77	grab	M1-77-46	N.L.	7.8	300	- unaerated
		07/20/77	grab	M1-77-46	N.L.	7.8	300	
ALCHEM - Burlington (WC)	Stormwater Drainage Sump	06/07/77	grab	77-84	N.L.	8.1	1400	- unaerated

DATA SUMMARY SHEET

COMPANY NAME and LOCATION	EFFLUENT	SAMPLE DATE M/ D/ Y	SAMPLING METHOD	TEST NO.	96-HOUR -LC 50	pH	CONDUCTIV- TIVITY	COMMENTS
ALEXANDRIA MUNICIPAL DISCHARGE - Alexandria (SE)	Manholes of Outfalls of Lagoons 1,2,3	08/10/77	3 grabs	M1-77-92	N.L.	7.5	700	
ALGOMA STEEL - S.S. Marie (NE)	Terminal Basin	09/07/76	grab	M1-76-28	<10%	8.5	340	- unaerated-10% killed all fish in 0.5 hr.
		09/07/76	grab	M1-76-28	<10%	8.5	340	- 10% killed all fish in 0.5 hr.
		09/07/76	grab	M1-76-28	2.0%	8.5	340	- unaerated
		09/07/76	grab	M1-76-28	2.0%	8.5	340	
		06/06/77	grab	M1-77-14	<5%	9.2	265	- unaerated 5% killed all fish in 0.5 hr.
		06/06/77	grab	M1-77-14	<100%	9.2	265	- 100% killed all fish in 0.5 hr.
		06/06/77	grab	M1-77-14	1.4%	9.2	265	- unaerated-LC50 range 1-2%
		07/24/78	12hr comp.	M2-78-169	2.45%	7.85	290	- LC50 range 2-3%
		07/25/78	12hr comp.	M2-78-177	0.88%	7.03	260	
		07/25/78	12hr comp.	M2-78-184	1.3%	7.0	200	
		07/26/78	12hr comp.	M2-78-185	1.4%	7.6	240	- LC50 range 1-2%
		07/26/78	12hr comp.	M2-78-187	1.3%	7.7	230	
		07/27/78	12hr comp.	M2-78-188	1.2%	8.0	210	- LC50 1-1.5%
		07/27/78	12hr comp.	M2-78-197	1.3%	8.2	240	
		07/28/78	14.5hr "	M2-78-198	1.18%	8.0	220	
		07/28/78	grab	M2-78-207	0.93%	7.65	250	
		07/27/78	grab	M2-78-210	1.17%	8.35	250	
		07/10/79	24hr comp.	79-74	2.1%	9.2	315	
		07/11/79	24hr comp.	79-76	2.4%	9.1	285	- LC50 range 2-3%
		07/12/79	24hr comp.	79-78	2.37	9.3	305	
		07/13/79	24hr comp.	79-80	3.9%	8.6	205	- LC50 range 2-5%
		07/10/79	24hr comp.	M2-79-9	2.2%	9.3	271	

DATA SUMMARY SHEET

COMPANY NAME and LOCATION	EFFLUENT	SAMPLE DATE M/ D/ Y	SAMPLING METHOD	TEST NO.	96-HOUR -LC 50	pH	CONDUCTIVITY	COMMENTS
ALGOMA STEEL - S.S. Marie (NE) (continued)	Dorr Thickener	09/13/76	grab	M1-76-35	<10%	10.7	330	- unaerated 10% killed all fish in 0.5 hours. pH adjusted to 8.0
		09/13/76	grab	M1-76-35	<10%	10.7	330	- unaerated 10% killed all fish in 0.5 hours
		09/13/76	grab	M1-76-35	3.5%	10.7	330	" " "
		09/13/76	grab	M1-76-34	2.4%	10.7	330	- unaerated 10% killed all fish in 0.5 hours
		06/06/77	grab	M1-77-13	N.L.*	9.6	170	- " pH adjusted to 7.0 * at 50%
		06/06/77	grab	M1-77-13	100%	9.6	170	- 100% killed all fish in 4 hours
		06/06/77	grab	M1-77-13	N.L.*	9.6	170	- unaerated * at 10%
		07/25/78	24hr comp.	M2-78-178	1.75%	8.0	380	
		07/26/78	24hr comp.	M2-78-182	2.7%	8.5	260	
		07/27/78	24hr comp.	M2-78-196	4%	9.0	250	- LC50 3-5%
		07/28/78	grab	M2-78-199	3.5%	9.9	195	
		07/27/78	grab	M2-78-208	7.0%	10.75	239	- LC50 range 5-10%
		07/10/79	24hr comp.	79-73	N.L.*	8.5	240	- * at 20%
		07/11/79	24hr comp.	79-75	N.L.*	8.3	250	- * 20%
		07/13/79	24hr comp.	79-79	N.L.	8.5	230	
		07/13/79	grab	79-81	N.L.	8.7	220	
		07/13/79	grab	79-82	N.L.	8.1	170	
		07/10/79	24hr comp.	M2-79-10	N.L.	8.8	242	
	Bar & Strip Mill (pre-lag)	07/24/78	4hr grab	M2-78-163	N.L.	6.5	120	
		07/27/78	comp. grab	M2-78-190	N.L.	7.3	95	

DATA SUMMARY SHEET

COMPANY NAME and LOCATION	EFFLUENT	SAMPLE DATE M/ D/ Y	SAMPLING METHOD	TEST NO.	96-HOUR -LC 50	pH	CONDUCT- TIVITY	COMMENTS
ALGOMA STEEL - S.S. Marie (NE) (continued)	Bar & Strip Mill (final)	07/24/78	4hr grab	M2-78-162	N.L.	7.0	150	
		07/25/78	grab	M2-78-171	N.L.	7.5	180	
		07/27/78	grab	M2-78-189	N.L.	7.0	115	
		07/28/78	grab	M2-78-206	N.L.	7.35	135	
	60" Blast Furnace Sewer	07/24/78	comp. of grabs	M2-78-164	N.L.	6.7	110	
		07/25/78	grab	M2-78-172	N.L.	7.7	160	
		07/26/78	grab	M2-78-180	N.L.	6.0	140	
		07/27/78	grab	M2-78-191	N.L.	7.5	95	
		07/28/78	grab	M2-78-205	N.L.	7.6	130	
	30" Blast Furnace Sewer	07/24/78	comp. of grabs	M2-78-165	N.L.	6.65	150	
		07/25/78	grab	M2-78-173	N.L.	7.6	200	
		07/26/78	grab	M2-78-181	N.L.	5.4	200	
		07/27/78	grab	M2-78-192	N.L.	7.2	145	
		07/28/78	grab	M2-78-204	N.L.	6.85	235	
	B.O.F. Cooling Water	07/24/78	grab	M2-78-170	N.L.	8.1	140	
		07/28/78	grab	M2-78-203	N.L.	7.65	145	
	Intake	07/25/78	24hr comp.	M2-78-179	N.L.	7.7	140	
		07/26/78	24hr comp.	M2-78-183	N.L.	7.2	180	
		07/25/78	24hr comp.	M2-78-195	N.L.	7.9	90	
		07/28/78	24hr comp.	M2-78-200	N.L.	7.7	130	
	Cold Mill Basin	07/24/78	comp. of grabs	M2-78-167	N.L.	7.0	105	
		07/25/78	grab	M2-78-175	N.L.	7.8	160	
		07/27/78	grab	M2-78-193	N.L.	7.6	100	
		07/28/78	grab	M2-78-202	N.L.	7.6	140	

DATA SUMMARY SHEET

COMPANY NAME and LOCATION	EFFLUENT	SAMPLE DATE M/ D/ Y	SAMPLING METHOD	TEST NO.	96-HOUR -LC 50	pH	CONDUCTIVITY	COMMENTS
ALGOMA STEEL - S.S. Marie (NE) (continued)	Cold Mill Sewer	09/13/76	grab	M1-76-34	N.L.	6.9	140	- unaerated
		06/06/77	grab	M1-77-15	N.L.	6.9	160	- unaerated
		06/06/77	grab	M1-77-15	N.L.	6.9	165	
	Tube Division	07/24/78	comp. of grabs	M2-78-166	N.L.	6.8	110	
		07/25/78	grab	M2-78-174	N.L.	7.7	160	
		07/26/78	grab	M2-78-186	>100%	7.4	140	- 40% mortality in 100%
	Cold Mill Acid Sewer	07/24/78	comp. of grabs	M2-78-168	35%	3.5	680	- LC50 range 30-40%
		07/25/78	grab	M2-78-176	5.2%	2.2	400	
		07/27/78	grab	M2-78-194	39%	4.4	360	- LC50 range 30-50%
		07/27/78	grab	M2-78-209	30.2%	3.9	850	- LC50 range 20-50%
		07/28/78	grab	M2-78-201	14.3%	3.4	940	- LC50 range 10-20%
ALLIED CHEMICALS - Amherstberg (SW)	Main Plant Sewer	03/28/77	grab	77-33	N.L.	8.4	1300	
	North Drainage	03/28/77	grab	77-34	17%	11.4	41000	- LC50 range 10-30%
AMERICAN CAN OF CANADA - Marathon (NW)	Excess Bleach Plant Filtrate (inplant sample)	09/28/78	4hr comp.	78-66	0.55%	9.7	1750	- pH adjusted to 6.3 - LC50 range 0.3-1%
	Machine Room Effluent (in- plant samples)	09/28/78	4hr comp.	78-167	N.L.	9.3	195	- pH adjusted to 6.3

DATA SUMMARY SHEET

COMPANY NAME and LOCATION	EFFLUENT	SAMPLE DATE M/ D/ Y	SAMPLING METHOD	TEST NO.	96-HOUR -LC 50	pH	CONDUCTIVITY	COMMENTS
AMERICAN CAN OF CANADA - Marathon (NW) (continued)	Effluent to Clarifier (inplant sample)	09/28/78	4hr comp.	78-68	22.6%	10.4	495	- pH adjusted to 6.0
	Caustic Filt- trate (inplant sample)	09/28/78	4hr comp.	78-65	49.9%	9.1	2200	- pH adjusted to 6.3
	#2 Evapora- tor Condensate (inplant sample)	09/28/78	4hr comp.	78-61	N.L.*	9.5	125	- pH adjusted to 6.3* at 10%
		09/28/78	4hr comp.	78-61	16.6%	9.5	125	- pH adjusted to 6.6
	Recovery Furnace Sewer including bark press effluent (inplant sample)	09/28/78	4hr comp.	78-75	53.3%	10	560	- pH adjusted to 6.3
	Barkpress (inplant sample)	09/28/78	4hr comp.	78-73	49%	6.8	125	- pH adjusted to 6.2 - LC50 range 30-80%
	Recovery Furnace Sewer (inplant sample)	09/28/78	4hr comp.	78-74	68%	11.1	730	- pH adjusted to 6.3 - 33% mortality in 68%

DATA SUMMARY SHEET

COMPANY NAME and LOCATION	EFFLUENT	SAMPLE DATE M/ D/ Y	SAMPLING METHOD	TEST NO.	96-HOUR -LC 50	pH	CONDUCTIVITY	COMMENTS
AMERICAN CAN OF CANADA - Marathon (NW) (continued)	Woodroom Effluent (inplant sample)	09/28/78	4hr comp.	78-72	N.L.*	6.9	100	- pH adjusted to 6.2 * at 80%
	Combined Mill Effluent	05/09/78	8hr comp.	78-26	100%	8.1	1050	- 10% mortality in 100%
		09/28/78	4hr comp.	78-71	55.6%	5.9	1400	- pH adjusted to 6.1
		10/14/79	comp. of grabs	79-161	59%	6.2	1300	
		07/15/80	16hr comp.	M3-80-11	24%	3.7	1300	- acid spill in plant
		08/12/80	24hr comp.	M3-80-45	82%	7.3	1200	
		03/25/80	4hr grab comp.	M3-80-64	63%	6.2		
	Main Mill Effluent (inplant sample)	05/09/78	8hr comp.	78-28	51%	10.54	1020	- LC50 range 45-65%
		05/09/78	8hr comp.	78-28	<100%	10.54	1020	- pH adjusted to 7.6 100% killed all fish in 48 hrs.
		09/28/78	4hr comp.	78-70	63%	9.9	1370	- pH adjusted to 6.3 - LC50 range 50-80%
		07/15/80	16hr comp.	M3-80-12	60%	9.3	1300	
	Effluent from Clarifier (inplant sample)	09/28/78	4hr comp.	78-69	63%	10.4	500	- pH adjusted to 6.3 LC50 range 50 - 80%
	Acid Bleachery (inplant sample)	05/09/78	8hr comp.	78-27	25.5%	2.55	1800	
		05/09/78	8hr comp.	78-27	35%	2.55	1800	- pH adjusted to 7.4
	Caustic Bleacher (inplant sample)	05/09/78	8hr comp.	78-29	24.5%	11.7	1900	- LC50 range 20-30%
		05/09/78	8hr comp.	78-29	41%	11.7	1900	- pH adjusted to 7.8%

DATA SUMMARY SHEET

COMPANY NAME and LOCATION	EFFLUENT	SAMPLE DATE M/ D/ Y	SAMPLING METHOD	TEST NO.	96-HOUR -LC 50	pH	CONDUCTIV- TIVITY	COMMENTS
AMERICAN CAN OF CANADA - Marathon (NW) (continued)	Main Mill Sump (inplant sample)	05/09/78 05/09/78	8hr comp. 8hr comp.	78-30 78-30	41.6% <100%	9.82 9.82	470 470	- pH adjusted to 7.7 100% killed all fish in 24 hrs.
	Foul Water from Digester Blow (inplant sample)	09/28/78	4hr comp.	78-59	3.2	9.7	270	- LC50 range 2-5% pH adjusted to 6.3
	#1 Evaporator Condensate (inplant sample)	09/28/78	4hr comp.	78-60	3.2%	10.3	790	- LC50 range 2-5% pH adjusted to 6.3
	Condensate from Surface Condensor (inplant sample)	09/28/78 07/15/80	4hr comp. 16hr comp.	78-62 M3-80-14	1.8% 7%	10.5 8.4	1380 150	- pH adjusted to 6.3
	Unbleached White Water (inplant sample)	09/28/78	4hr comp.	78-63	8%	11.6	1110	- pH adjusted to 6.3
	Acid Filtrate (inplant sample)	09/28/78 07/15/80	4hr comp. 16hr comp.	78-64 M3-80-13	10% 3%	1.9 1.8	3950 3850	- pH adjusted to 6.2

DATA SUMMARY SHEET

COMPANY NAME and LOCATION	EFFLUENT	SAMPLE DATE M/ D/ Y	SAMPLING METHOD	TEST NO.	96-HOUR -LC 50	pH	CONDUCTIVITY	COMMENTS
ASHLAND OIL - Mississauga (C)	Holding Lagoon	06/01/76	grab	76-84	0.01%			- unaerated
ATLAS STEEL CO. LTD. - Welland (WC)	52" Sewer	09/10/74	grab		N.L.			- unaerated P.Promelas test organism
	36" Sewer	09/10/74	grab		N.L.			- unaerated P.Promelas test organism
	Patterson Ave. Sewer	09/10/74	grab		N.L.			- unaerated P.Promelas test organism
	Intake (Service Water)	09/10/74	grab		N.L.			- unaerated P.Promelas test organism
AULTS - Winchester (SE)	North Lagoon Outfall	09/15/77	grab	M2-77-117	27.5%	8.4	2150	
	Final Lagoon Outfall	07/06/76	8 grabs	M2-76-20	74%	8.25	2750	- unaerated LC50 range 56-100%
		07/07/76	8 grabs	M2-76-21	74%	8.25	2800	- unaerated LC50 range 56-100%
		07/08/76	8 grabs	M2-76-22	74%	8.25	2400	- unaerated LC50 range 56-100%
		09/28/76	8 grabs	76-164	<50%	8.35	2500	- unaerated 50% killed 90% of all fish in 72 hrs.
		09/28/76	8 grabs	76-164	<100%	8.35	2500	- 100% killed all fish in 2 hours
		09/29/76	8 grabs	76-165	<50%	8.4	2700	- unaerated 50% killed all fish in 48 hours

DATA SUMMARY SHEET

COMPANY NAME and LOCATION	EFFLUENT	SAMPLE DATE M/ D/ Y	SAMPLING METHOD	TEST NO.	96-HOUR -LC 50	pH	CONDUCTIVITY	COMMENTS
AULTS - Winchester (SE) (continued)		09/29/76	8 grabs	76-165	100%	8.4	2700	- 100% kiled all fish in 15 hours
		01/12/77	3 x 8hr comp.	77-2	7.5%	7.7	2600	- LC50 range 5-10%
		01/13/77	" "	77-3	7.5%	7.5	2550	- LC50 range 5-10%
		01/14/77	" "	77-4	14%	7.6	2600	- LC50 range 10-20%
	South Lagoon Outfall	10/17/78	grab	M2-78-282	>100%	8.0	1800	- unaerated 5% mortality in 100%
		10/17/78	grab	M2-78-282	N.L.	8.0	1800	
BAKELITE THERMOSETS - Belleville (SE)	West Ditch	07/05/76	grab	M2-76-19	N.L.			
		07/06/77	grab	M2-77-49	N.L.	7.2	220	
	East Ditch	05/03/76	grab	76-58	N.L.	7.9	180	
		07/06/77	grab	M2-77-50	N.L.	9.4	205	
BASF - Wyandotte, Mich. (SW)	South Effluent -Fighting Is.	03/28/77	grab	77-31	7%	12	46500	- LC50 range 5-10%
		04/01/80	grab	80-46	40%	11.9	42000	- pH adjusted to 7.9
		04/01/80	grab	80-45	17%	11.9	42000	
	North Effluent -Fighting Is.	03/28/77	grab	77-30	6.1%	11.8	110000	
BEAVER CHARCOAL - North Bay (NE)	Main Effluent -Tailings Pond at Dam	06/21/76	grab	M1-76-9	>100%	7.1	55	- unaerated 30% mortality in 100%
	Phenol Pond	08/23/77	grab	M1-77-76	10%	6.1	145	- unaerated
		08/23/77	grab	M1-77-76	<100%	6.1	145	- 100% killed all fish in 0.5 hour

DATA SUMMARY SHEET

COMPANY NAME and LOCATION	EFFLUENT	SAMPLE DATE M/ D/ Y	SAMPLING METHOD	TEST NO.	96-HOUR -LC 50	pH	CONDUCTIVITY	COMMENTS
BEAVER WOOD FIBRE CO. LTD. - Thorold (WC)	Final Effluent (at Clarifier)	05/17/76	grab	76-67	60%	7.7	440	- unaerated
		05/17/76	grab	76-67	60%	7.7	440	
		04/23/80	grab	80-59	81%	6.2	420	- 40% mortality in 100%
		10/07/80	grab	80-195	>100%	6.8	510	
	Beaver Dam's Ck (downstream)	04/23/80	grab	80-60	70%	6.5	415	
	Beaver Dam's Ck (upstream)	04/23/80	grab	80-53	>100%	7.3	620	- 10% mortality in 100%
BELL NORTHERN RESEARCH - Ottawa (SE)	Discharge from Lagoon (Mill Plant)	06/20/77	grab	M2-77-30	N.L.	6.9	380	- unaerated
	Discharge from Lagoon (Central Lab)	06/20/77	grab	M2-77-31	N.L.	9.7	450	- unaerated
B.F. GOODRICH - Niagara Falls (WC)	Final Effluent (from aerated pond)	03/15/76	grab	76-25	<100%	9.0	495	- 100% killed all fish in 49 hours
	Settling Pond on Co. Property (South side)	02/23/76	grab	76-6	N.L.	8.5	460	- unaerated

DATA SUMMARY SHEET

COMPANY NAME and LOCATION	EFFLUENT	SAMPLE DATE M/ D/ Y	SAMPLING METHOD	TEST NO.	96-HOUR -LC 50	pH	CONDUCTIVITY	COMMENTS
BOISE-CASCADE CANADA LIMITED - Fort Frances (NW)	Final Effluent	07/26/77	grab	M1-77-52	<10%	6.4	1200	- 10% killed all fish in 48 hours
		08/13/79	grab	79-116	32%	7.0	1750	
		07/08/80	grab	M3-80-5	4%	6.2	1950	
		07/22/80	grab	M3-80-22	9%	6.8	1650	
		08/06/80	grab	M3-80-38	6%	6.3	2000	
	Intake (Service Water)	08/13/79	grab	79-115	N.L.	7.5	47	
	Clarifer	07/08/80	grab	M3-80-8	11%	5.7	240	
		07/22/80	grab	M3-80-25	14%	6.3	430	
		08/06/80	grab	M3-80-41	13%	5.5	250	
	Aeration Lagoon Influent	07/08/80	grab	M3-80-7	7%		2500	
		07/22/80	grab	M3-80-24	5%	3.5		
		08/06/80	grab	M3-80-39	4%	3.0	2400	
	Aeration Lagoon Effluent	07/08/80	grab	M3-80-6	3.5%	6.3	2700	
		07/22/80	grab	M3-80-23	8%	6.7	2550	
		08/06/80	grab	M3-80-40	5%	6.5	3000	
BOISE-CASCADE CANADA LIMITED - Kenora (NW)	White Water Clarifier (Implant sample)	11/20/79	grab	79-177	24%	6.0	425	- LC50 range 18-33%
		07/15/80	grab	M3-80-16	42%	6.0	390	
		07/28/80	grab	M3-80-33	39%	6.4	240	
		08/11/80	grab	M3-80-44	29%	6.1	240	
	Mg Sulfite (Implant sample)	19/11/79	24hr comp.	79-176	3%	4.3	1100	- LC50 range 1.8-5%
	Raw Water (Intake)	11/20/79	grab	79-175	N.L.	6.9	85	

DATA SUMMARY SHEET

COMPANY NAME and LOCATION	EFFLUENT	SAMPLE DATE M/ D/ Y	SAMPLING METHOD	TEST NO.	96-HOUR -LC 50	pH	CONDUCTIV- TIVITY	COMMENTS
BOISE-CASCADE CANADA LIMITED - Kenora (NW) (continued)	Final Effluent	07/25/77 11/19/79 07/15/80 07/28/80 08/11/80	grab 24hr comp. grab grab grab	M1-77-47 79-178 M3-80-15 M3-80-32 M3-80-43	50% 16% 24% 37% 36%	6.1 6.2 4.1 6.3 6.0	310 700 1100 220 210	
BORG WARNER - Coburg (C)	Clarifier	02/16/76	grab	76-1	42%	7.6	1500	- LC50 range 32-56% unaerated
BRITISH PETROLEUM (BP) - Oakville (C)	Final Holding Pond	06/11/79 06/11/79	grab grab	79-47 79-47	>100% >100%*	8.3 8.3		- 15% mortality in 100% - * 24hr test-10% mortality in 100%
BULORE MINE - Red Lake (NW)	Madison Tailings Pond Decant	07/16/79	grab	79-83	N.L.	7.4	480	- unaerated
CAMPBELL RED LAKE MINE - Red Lake (NW)	Tailings Pond Decant	07/16/79 08/18/80	grab grab	79-89 M3-80-55	0.21% <2%	8.9 8.0	1700	- LC 50 range 0.1-0.5% unaerated
CANADA STARCH - Cardinal (SE)	Combined #2 Plant & Lagoon (Discharge Point to St. Lawrence R.)	09/03/76 07/13/77	grab grab	M2-76-55 M2-77-60	70% N.L.	6.9 7.0	255 480	- unaerated

DATA SUMMARY SHEET

COMPANY NAME and LOCATION	EFFLUENT	SAMPLE DATE M/ D/ Y	SAMPLING METHOD	TEST NO.	96-HOUR -LC 50	pH	CONDUCT- TIVITY	COMMENTS
CANADA STARCH - Cardinal (SE) (continued)	Total Solvent Sewer	06/21/76	grab	M2-76-11	20%	7.55	260	- unaerated
		07/07/76	grab	M2-76-17	80%	7.8	285	- unaerated
		09/03/76	grab	M2-76-51	N.L.	7.45	265	- unaerated
		07/13/77	grab	M2-77-58	N.L.	7.6	275	
	24" Sewer	06/21/76	grab	M2-76-12	N.L.	7.4	360	- unaerated
		09/03/76	grab	M2-76-55	N.L.	7.8	370	- unaerated
		07/13/77	grab	M2-77-59	N.L.	7.4	325	
	#2 Plant Sewer	06/21/76	grab	M1-76-13	45%	7.7	260	- LC50 range 32-56% - unaerated
		09/03/76	grab	M2-76-54	74%	7.5	265	- LC50 range 56-100% - unaerated
		07/13/77	grab	M2-77-62	N.L.	7.5	270	
	Treatment Lagoon	09/03/76	grab	M2-76-53	32%	6.7	470	- unaerated
		07/19/77	grab	M2-77-61	N.L.	7.0	600	
	Immed. prior to lagoon effl. mixing with #2 plant sewer effluent	07/05/76	grab	M2-76-18	14%	7.0	640	- unaerated LC50 range 10-18%
CANADAKA MINES - Elliot Lake (NE)	Discharge of Tailings Ponds	07/20/77	grab	M1-77-42	N.L.	7.6		- unaerated
		07/20/77	grab	M1-77-42	N.L.	7.6	656	
CANADIAN INDUSTRIES LTD. C.I.L. - Cornwall (SE)	LEL-2 Sewer	12/05/79	grab	79-191	N.L.	10.4	2000	
		12/05/79	grab	79-191	N.L.	10.4	2000	- pH adjusted to 8.5
		12/06/79	grab	79-192	71%	3.5	3500	
		12/06/79	grab	79-192	N.L.	3.5	3500	pH was adjusted to 6.0

DATA SUMMARY SHEET

COMPANY NAME and LOCATION	EFFLUENT	SAMPLE DATE M/ D/ Y	SAMPLING METHOD	TEST NO.	96-HOUR -LC 50	pH	CONDUCTIVITY	COMMENTS
CANADIAN INDUSTRIES LTD. C.I.L. (continued)								
- Corunna (SW)	Intake (Service Water)	07/12/76	grab	76-129	N.L.	8.2	170	- unaerated
	Effluent Fore- bay in St. Clair River	07/12/76 07/26/79	grab grab	76-128 M2-79-23	N.L. N.L.	7.45 8.5	210 225	- unaerated
- Parry Sound (NE)	Final Settling Pond	09/14/76	grab	M1-76-36	>100%	8.4	260	- unaerated-30% mortality in 100%
		08/29/77	grab	M1-77-78	64.4%	4.5	270	- unaerated
		08/29/77	grab	M1-77-78	>100%	4.5	270	- 30% mortality in 100%
- Sudbury (NE)	Final Effluent	08/30/77	grab	M1-5-79	36.2%	9.2	3200	- unaerated
		08/30/77	grab	M1-5-79	<100%	9.2	3200	- 100% killed all fish in 1.5 hours.
CANADIAN INTERNATIONAL PAPER (C.I.P.)								
- Hawkesbury (SE)	Sludge Holding Pond	08/24/77	grab	M2-76-46	13.5%	3.7	1165	- unaerated LC50 range 10-18%
		08/11/77	grab	M2-77-95	40%	5.3	1350	
	Outfall of Main Lagoon	08/11/77 10/15/80	grab grab	M2-77-94 80-198	18% 18%	3.5 3.6	1200 1120	
	Settling Pond	08/24/76	grab	M2-76-45	10.5%	4.9	320	- unaerated

DATA SUMMARY SHEET

COMPANY NAME and LOCATION	EFFLUENT	SAMPLE DATE M/ D/ Y	SAMPLING METHOD	TEST NO.	96-HOUR -LC 50	pH	CONDUCT- TIVITY	COMMENTS
CANADIAN SMELTING & REFINERY - North Bay (NE)	Lagoon	07/20/77	grab	M1-77-45	N.L.	7.9	940	- unaerated
		07/20/77	grab	M1-77-45	N.L.	7.9	940	
CARAVELL CARPETS - Cornwall (SE)	#8 Sewer	10/01/80	24hr comp.	80-181	N.L.	7.1	405	
		09/23/80	24hr comp.	80-164	N.L.	7.2	365	
CELANESE - Cornwall (SE)	Final Effluent	08/10/76	grab	M2-76-35	N.L.	7.57	280	- unaerated
		07/12/77	grab	M2-77-56	N.L.	7.4	290	
- Millhaven (SE)	Sewer Manhole (Central Outfall)	06/07/76	grab	M2-76-1	N.L.	8.0	210	- unaerated
		08/03/76	grab	M2-76-34	N.L.	7.8	270	
		05/31/77	grab	M2-77-6	>100%	6.9	285	- 10% mortality in 100%
	East Ditch (Cooling Water)	06/07/76	grab	M2-76-2	>100%	8.05	275	- 30% mortality in 100%
		05/30/77	grab	M2-77-7	N.L.	7.7	280	unaerated
	West Ditch (Cooling Water)	06/07/76	grab	M2-76-3	>100%	8.0	270	- 10% mortality in 100%
		05/30/77	grab	M2-77-8	N.L.	7.8	280	unaerated
CHEMICAL DEVELOPMENT OF CANADA - Longford Mills (C)	Mix of lagoon and cooling water (shore of L. St. John)	05/03/76	grab	76-56	24%	7.1		- unaerated LC50 range 18-32%
	Cooling Water	05/03/76	grab	76-55	N.L.	7.9	110	- unaerated
	Lagoon Discharge	04/20/76	grab	76-50	<10%	7.75	4075	- unaerated 10% killed all fish in 15 min.
		04/20/76	grab	76-50	0.70%	7.75	4075	- unaerated
		05/03/76	grab	76-54	0.6%	7.4		- unaerated

DATA SUMMARY SHEET

COMPANY NAME and LOCATION	EFFLUENT	SAMPLE DATE M/ D/ Y	SAMPLING METHOD	TEST NO.	96-HOUR -LC 50	pH	CONDUCTIVITY	COMMENTS
CHROMASCO								
- Haley Station (SE)	Final Effl. (40L from West Cr. and 20L of plant effluent)	07/16/76 06/03/77	grab grab	M2-76-26 M2-77-11	N.L. N.L.	8.8 8.7	650 330	- unaerated
	West Ck. Ditch	06/03/77	grab	M2-77-12	38%	9.4	700	- LC50 range 30-50%
CHRYSLER CANADA LTD.								
- Windsor (SW)	Final Effluent	03/28/77	grab	77-28	<70%	8.2	1240	- 70% killed all fish in 48 hrs.
COBALT CAMP								
- Farr Creek (NE)	Mill Creek Pond	06/29/76	grab	M1-76-11	N.L.	7.2	180	- unaerated
COCHENOUR WILLAMS MINE								
- Red Lake (NW)	Tailings Pond decant	07/16/79	grab	79-88	N.L.	9.3	350	- unaerated
COCHRANE ENTERPRISES								
- Cochrane (NE)	Main Ditch (Leachate)	07/27/76 07/27/76	grab grab	M1-76-17 M1-76-17	>100% <10%	7.4 7.4	1430 1430	- 30% mortality in 100% - unaerated 10% killed all fish in 33 hrs.
		08/27/79	grab	79-152	<2.5%	6.2	910	- unaerated 2-5% killed all fish in 33 hrs.
		08/27/79	grab	79-152	15%	6.2	910	- LC50 range 10-22%

DATA SUMMARY SHEET

COMPANY NAME and LOCATION	EFFLUENT	SAMPLE DATE M/ D/ Y	SAMPLING METHOD	TEST NO.	96-HOUR -LC 50	pH	CONDUCT- TIVITY	COMMENTS
COLLIE WOOLEN MILLS - Appleton (SE)	Pipe Outlet	06/21/77 09/07/77	grab grab	M2-77-35 M2-77-112	14% 16.5%	5.2 5.7	1650 360	- LC50 range 10-20%
	Lagoon Outfall	07/30/76 09/07/77	grab grab	M2-77-32 M2-77-113	16% 21%	7.6 6.5	1430 770	- unaerated
CONSOLIDATED BATHURST - Whitby (C)	Print Press Wash	03/17/80 03/17/80 03/17/80 03/17/80 03/17/80 03/17/80 03/17/80 03/17/80	grab grab grab grab grab grab grab grab	80-36 80-39 80-40 80-41 80-36 80-39 80-40	0.54% <1.0% <1.0% 1.5% 0.8% 17% 5.4%	8.0	700	- unaerated - Treatment #1 - unaerated - Treatment #2 - unaerated - Treatment #3 - unaerated - Treatment #1 - Treatment #2
	Pure Red Dye	03/17/80	grab	80-36	35ppm			- unaerated
	Pure Yellow	03/17/80	grab	80-38	260ppm			- unaerated
CONSOLIDATED TEXTILES - Alexandria (SE)		04/24/79 04/24/79	grab grab	79-17 79-17	1.6% 3.3%	6.0 6.0	740 740	- LC50 range 0.5-5% - unaerated
CORBY'S DISTILLERY - Corbyville (SE)	Manhole by River	05/30/77 06/09/77 06/09/77	grab grab grab	M2-77-2 M2-77-15 M2-77-15	N.L. N.L. >100%	6.8 8.3 8.3	240 270 270	- unaerated 10% mortality in 100%

DATA SUMMARY SHEET

COMPANY NAME and LOCATION	EFFLUENT	SAMPLE DATE M/ D/ Y	SAMPLING METHOD	TEST NO.	96-HOUR -LC 50	pH	CONDUCTIVITY	COMMENTS
CORNWALL CHEMICALS - Cornwall (SE)	Manhole #26	12/06/79	grab	79-193	N.L.	8.7	1950	
	Combined Effluent	08/10/76	grab	M2-76-38	<10%			- unaerated - 10% killed all fish in 33 hrs.
		08/10/76	grab	M2-76-38	7.5%			- unaerated
		07/23/76	grab	M2-76-28	24%	7.9	4100	- unaerated
		08/10/76	grab	M2-76-36	43%	9.1	3425	- unaerated
		06/28/77	grab	M2-77-43	N.L.	6.6	1400	
		12/05/79	grab	79-189	87%	3.8	5500	
		12/05/79	grab	79-189	N.L.	3.8	5500	- pH adjusted to 6.1
		12/06/79	grab	79-190	71%	3.2	1650	
		12/06/79	grab	79-190	N.L.	3.2	1650	- pH adjusted to 6.1
CORNWALL MUNICIPAL DISCHARGE - Cornwall (SE)	Manhole in front of chlorination building	08/10/77	grab	M2-77-91	83%	6.7	1000	- LC50 range 70-100%
COURTAULDS - Cornwall (SE)	Viscose (#5 Sewer)	08/27/76	grab	M2-76-50	14%	11.65	1800	- unaerated LC50 range 10-18%
		06/27/77	grab	M2-77-39	5.0%	13.2	8800	
		06/27/77	grab	M2-77-39	4.2%	13.2	8800	- pH adjusted to 7.0
		08/16/77	grab	M2-77-100	16%	11.8	2400	- LC50 range 10-25%
		08/16/77	grab	M2-77-100	8.5%	11.8	2400	- pH adjusted to 6.9
		11/30/77	grab	M2-77-126	4.9%	11.8	2800	
		04/24/79	grab	79-13	N.L.*	12.1	2600	- * at 2%
		04/24/79	grab	79-13	3.5%	12.1	2600	- LC50 range 2-5% pH adjusted to 7.8
		04/24/79	grab	79-13	3.5%	12.1	2600	- "

DATA SUMMARY SHEET

COMPANY NAME and LOCATION	EFFLUENT	SAMPLE DATE M/ D/ Y	SAMPLING METHOD	TEST NO.	96-HOUR -LC 50	pH	CONDUCTIVITY	COMMENTS
COURTAULDS - Cornwall (SE) (continued)		09/23/80	24hr comp.	80-161	13%	11.9	2570	
		09/23/80	24hr comp.	80-172	N.L.	7.3	1800	- pH adjusted
		10/01/80	24hr comp.	80-178	14%	11.9	2600	
		10/01/80	24hr comp.	80-189	49%	7.8	1650	- pH adjusted
	Alkaline (Sulphide) Sewer #4	03/09/76	grab	79-15	2.6%	9.5	1850	- unaerated
		08/16/77	grab	M2-77-99	14%	11.0	3200	
		08/16/77	grab	M2-77-99	31%	11.0	3200	- pH adjusted
		11/30/77	grab	M2-77-125	N.L.	8.7	1500	
		04/24/79	grab	79-14	N.L.	7.3	2050	
		09/23/80	24hr comp.	80-160	15%	10.4	2500	
		09/23/80	24hr comp.	80-171	39%	8.2	2450	- pH adjusted
		10/01/80	24hr comp.	80-177	2%	10.6	2350	
		10/01/80	24hr comp.	80-188	4%	7.9	2400	- pH adjusted
	Acid Sewer #6	03/09/76	grab	76-14	2.3%	1.8	11600	- unaerated
		08/27/76	grab	76-49	<1.0%		1800	- " 70% mortality in 1%
		06/27/77	grab	M2-77-40	1.4%	1.2	12000	
		06/27/77	grab	M2-77-40	1.7%	1.2	12000	- pH adjusted to 7.0
		08/16/77	grab	M2-77-101	1.4%	1.9	13200	
		08/16/77	grab	M2-77-101	0.85%	1.9	13400	
		08/16/77	grab	M2-77-101	1.0%	1.9	13400	- pH adjusted
		08/16/77	grab	M2-77-101	1.2%	1.9	13400	- renewed static
		08/16/77	grab	M2-77-101	1.0%	1.9	13400	- diluted with St. Lawrence River water
		08/16/77	grab	M2-77-101	1.5%	1.9	13400	- diluted with St. Lawrence R. water - pH adjusted
		08/16/77	grab	M2-77-105	3.5%	1.9	13400	- H ₂ S treated
		08/16/77	grab	M2-77-107	0.25	1.9	13400	- precipitate from H ₂ S treated
		08/16/77	grab	M2-77-101	0.56%	1.9	13400	- stored 13 days @ 50C

DATA SUMMARY SHEET

COMPANY NAME and LOCATION	EFFLUENT	SAMPLE DATE M/ D/ Y	SAMPLING METHOD	TEST NO.	96-HOUR -LC 50	pH	CONDUCTIVITY	COMMENTS
COURTAULDS - Cornwall (SE) (continued)		08/16/77	grab	M2-77-101	0.59%	1.9	13400	- stored 13 days @ 20°C
		08/16/77	grab	M2-77-101	0.9%	1.9	13400	- stored 21 days @ 5°C
		08/16/77	grab	M2-77-101	1.05%	1.9	13400	- stored 21 days @ 20°C
		08/16/77	grab	M2-77-101	1.15%	1.9	13400	- stored 28 days @ 5°C
		08/16/77	grab	M2-77-101	1.2%	1.9	13400	- stored 28 days @ 20°C
		11/29/77	grab	M2-77-124	2.1%	1.8	16000	
		11/30/77	grab	M2-77-127	2.2%			
		04/24/79	grab	79-12	1.4%	1.5	22000	- LC50 range 0.5-2.0%
		04/24/79	grab	79-12	<2%	1.5	22000	- pH adjusted to 7.8 - 2% killed 90% of the fish in 96 hrs.
		10/01/80	24hr comp.	80-179	4%	1.7	16000	
		10/01/80	24hr comp.	80-190	5%	7.3	10500	- pH adjusted
		09/23/80	24hr comp.	80-162	0.1%	1.6	19500	
		09/23/80	24hr comp.	80-173	0.8%	7.0	14400	- pH adjusted
	Process	03/09/76	grab	76-13	32%	10.15	490	- unaerated
	Cleanup	06/27/77	grab	77-41	89%	11.1	800	
	Sewer #13	08/16/77	grab	77-102	N.L.	7.5	740	
		09/23/80	22hr comp.	80-165	N.L.	7.3	680	
		10/01/80	23hr comp.	80-182	84%	10.2	580	
	#7 Acid Recovery (manhole in front of plant parking lot)	08/16/77	grab	M2-77-98	N.L.	7.6	3200	
		09/23/80	grab	80-163	N.L.	8.1	305	
		10/01/80	grab	80-180	N.L.	7.9	265	
	50/50: Acid Sewer/#5 Viscose Sewer	08/27/76	grab	M2-76-50A	1.7%	1.75	7800	- unaerated

DATA SUMMARY SHEET

COMPANY NAME and LOCATION	EFFLUENT	SAMPLE DATE M/ D/ Y	SAMPLING METHOD	TEST NO.	96-HOUR -LC 50	pH	CONDUCTIVITY	COMMENTS
COURTAULDS - Cornwall (SE) (continued)	#14 Tankcar Unloading	09/23/80	grab	80-166	N.L.	7.3	295	
		10/01/80	grab	80-183	N.L.	7.3	310	
	#15 Sewer (Cooling Water)	09/23/80	grab	80-167	N.L.	7.5	1650	
		10/01/80	grab	80-164	N.L.	7.5	1850	
	Pumphouse (St. Lawrence River)	09/23/80	grab	80-169	N.L.	8.1	240	
		10/01/80	grab	80-186	N.L.	8.2	255	
	Thompson's Creek at Garner Rd.	08/27/74			10.8%			- fathead minnows (P. promelas) used - unaerated
		08/19/74			1.8%			- "
		08/11/75			22%			- "
		03/15/76	grab	76-20	21%	8.0	1520	- unaerated
		03/29/76	grab	76-30	4.5%			- unaerated
		03/13/79	grab	79-9	6%	9.5	1000	- LC50 range 2-10%
		03/13/79	grab	79-9	9.4%	9.5	1000	- pH adjusted to 7.4
		03/13/79	grab	79-9	>100%	9.5	1000	- pH adjusted to 7.8 - 1st run Dowex ammonia removed.
		03/13/79	grab	79-9	75%	9.5	1000	- pH adjusted to 7.6 - 2nd run Dowex ammonia removed. LC50 range 50-100%
	36" Sewer	08/27/74			2.85%			- unaerated - fathead minnows (P.promelas) used.
		08/19/74			1.3%			- "
		08/11/75			5.6%			LC50 range 1-1.8% - unaerated - fathead

DATA SUMMARY SHEET

COMPANY NAME and LOCATION	EFFLUENT	SAMPLE DATE M/ D/ Y	SAMPLING METHOD	TEST NO.	96-HOUR -LC 50	pH	CONDUCTIVITY	COMMENTS
CYNAMID OF CANADA - Welland (WC) (continued)		08/11/75			7.5%			minnows (P.promelas) used. - unaerated - fathead minnows (P.promelas) used. LC50 range 5.6-10%
		08/11/75			>7.5%			- unaerated - fathead minnows (P. promelas) used 7.5% killed 30% of the fish in 96 hrs.
		/75		CF-6	4%			- continuous flow
		03/15/76	grab	76-22	2.2%	9.4	3300	- unaerated
		03/29/76	grab	76-35	<0.75%			- unaerated 0.75% killed all fish in 1.5 hrs.
		03/13/79	grab	79-8	0.75	10	3000	- LC50 range 0.5-1%
		03/13/79	grab	79-8	3%	10	3000	- LC50 range 1-5% - pH adjusted to 7.8
		03/13/79	grab	79-8	N.L.	10	3000	- pH adjusted to 7.6 - 1 st run of Dowex ammonia removed
		03/13/79	grab	79-8	50%	10	3000	- pH adjusted to 7.5 - 2nd run of Dowex ammonia removed.
		06/23/80	grab	80-94	21%	9.2	495	
	Welland R. 60-70 yds. downstream of 36" Sewer	03/15/76	grab	76-21	<100%	9.2	345	- unaerated - 100% killed all fish in 1 hr.
		03/29/76	grab	76-36	<100%			- unaerated - 100% killed all fish in 0.5 hr.
	Welland R. at Moya Road Bridge upstream of Cyanamid	03/15/76	grab	76-24	N.L.	7.9	270	- unaerated
		03/29/76	grab	76-33	N.L.			- unaerated
		06/23/80	grab	80-100	N.L.	8.6	310	

DATA SUMMARY SHEET

COMPANY NAME and LOCATION	EFFLUENT	SAMPLE DATE M/ D/ Y	SAMPLING METHOD	TEST NO.	96-HOUR -LC 50	pH	CONDUCTIVITY	COMMENTS
CYANAMID OF CANADA - Welland (WC) (continued)	Thompson Cr. - downstream	03/29/76	grab	76-32	<100%			- unaerated 100% killed all fish in 0.5 hr.
		03/29/76	grab	76-31	13.5%			- unaerated
		06/23/80	grab	80-98	12%	8.6	90	
	18" Amanol Sewer to Thompson Creek	03/29/76	grab	76-29	<1.0%			- unaerated 1% killed all fish in 1.5 hr.
		06/23/80	grab	80-95	14%	8.9	900	
	Dicyandiamide Sewer	06/23/80	grab	80-96	8.7%	8.5	880	
	Thompson Creek (at Chippewa Creek Bridge)	06/23/80	grab	80-99	<100%	8.6	1000	
	Thompson Creek at Thorold Townline Rd.	03/13/79	grab	79-11	N.L.	8.3	220	
		03/29/76	grab	76-28	N.L.			- unaerated
		06/23/80	grab	80-97	N.L.	7.5	440	
	Intake	08/27/74			N.L.			- unaerated - fathead minnows (P.promelas) used
		08/11/75			N.L.			"
		03/15/76	grab	76-23	>100%	8.0	275	- 10% mortality - 100% - unaerated
		03/29/76	grab	76-34	N.L.			- unaerated
		03/13/79	grab	79-10	N.L.	7.5	210	
		06/23/80	grab	80-101	N.L.	8.7	295	
DELORO SMELTING & REFINING - Deloro (SE)	Final Effluent	06/14/76	grab	M2-76-6	56%	2.9	1210	- unaerated
		05/27/77	grab	M2-77-1	70%	4.7	940	- LC50 range 50-100%

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COMPANY NAME and LOCATION	EFFLUENT	SAMPLE DATE M/ D/ Y	SAMPLING METHOD	TEST NO.	96-HOUR -LC 50	pH	CONDUCT- TIVITY	COMMENTS
DELOORO SMELTING & REFINING - Deloro (SE) (continued)	Moir River at Malone Bridge	06/14/76	grab	M2-76-7	N.L.	8.0	215	- unaerated
		05/27/77	grab	M2-77-2	N.L.	7.7	210	
	Moir River at Hwy. 17	06/14/78	grab	M2-76-8	N.L.	8.25	215	
		05/27/78	grab	M2-77-3	N.L.	7.8	190	
DENISON MINE - Denison Property (NE)	Dunlop Lake Intake (D-10)	06/20/79	grab	79-66	N.L.	6.0	340	- unaerated
		08/22/79	grab	79-140	N.L.	6.3	360	- unaerated
	Stollery Lake outflow (D-05)	08/23/76	grab	M1-76-24	75%	8.1	2800	- unaerated
		07/20/77	grab	M1-77-40	56%	8.0	3200	LC50 range 50-100%
		07/20/77	grab	M1-77-40	<100%	8.0	3200	- unaerated
		06/20/79	grab	79-65	N.L.	6.7	240	- 100% killed all fish in 33hrs.
		08/22/79	grab	79-133	N.L.	7.5	2000	- unaerated
		06/10/80	grab	80-90	61%	8.7	2925	- unaerated
		06/10/80	grab	80-93	N.L.	8.6	3500	- clinoptilolite treated
		08/20/80	grab	80-137	20%	10.0	3100	
		08/20/80	grab	80-137	>100%	7.8	3250	- pH adjusted 30% mortality in 100%
		08/20/80	grab	80-140	<100%	10.1	3300	
	Tailings Effl. after Barium treatment at Dam 8 (D-02)	06/20/79	grab	79-64	56%	8.7	2700	- clinoptilolite treated 100% killed all fish in 24 hrs.
		06/20/79	grab	79-64	<70%	8.7	2700	- unaerated
		08/22/79	grab	79-138	84%	8.2	2650	LC50 range 30-100%
								- unaerated - 70% killed all fish in 72 hrs.
								- unaerated - LC50 range 70-100%

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COMPANY NAME and LOCATION	EFFLUENT	SAMPLE DATE M/ D/ Y	SAMPLING METHOD	TEST NO.	96-HOUR -LC 50	pH	CONDUCTIVITY	COMMENTS
DENISON MINE - Stanrock Property (NE) (continued)	(DS-04)	08/22/79	grab	79-142	N.L.	7.7	1500	- unaerated
	Feed to Barium treatment plant (DS-02)	06/20/79	grab	79-68	>10%	1.2	9500	- unaerated-10% mortality in 10% - pH adjusted to 7.8
		06/20/79	grab	79-68	N.L.*	1.2	9500	- pH adjusted to 7.8 * at 50%
	Tailings Effl. after 1st stage settling (DS-01)	06/20/79	grab	79-67	N.L.	8.2	500	- unaerated
		08/22/79	grab	79-141	<100%	5.4	1700	- unaerated - 100% killed all fish in 48 hrs.
		08/22/79	grab	79-141	N.L.	5.4	1700	- unaerated - pH adjusted to 8.4
	New Dam overflow	08/16/76	grab	M1-76-22	<10%	2.7	2500	- unaerated - 10% killed all fish in 4 hrs.
		08/16/76	grab	M1-76-22	N.L.	2.7	2500	- pH adjusted to 7.2
		06/20/77	grab	M1-77-23	N.L.	2.4	2400	- pH adjusted to 7.1 unaerated
		06/20/77	grab	M1-77-23	100%	5.6	2000	
DICKENSON GOLD MINES - Balmer Lake (NW)	Dickenson Tailings Pond	08/16/78	grab	78-50	<1%	10.1	850	- 1% killed all fish in 24 hrs.
		08/16/78	grab	78-50	0.66%	10.1	850	
		07/16/79	grab	79-86	2.2%	8.3	740	- unaerated LC50 range 1-5%
	Balmer Cr. near Chukuni River	08/15/78	grab	78-45	N.L.	7.0	250	
		07/16/79	grab	79-87	>100%	7.4	425	- unaerated - 10% mortality in 100%

DATA SUMMARY SHEET

COMPANY NAME and LOCATION	EFFLUENT	SAMPLE DATE M/ D/ Y	SAMPLING METHOD	TEST NO.	96-HOUR -LC 50	pH	CONDUCTIVITY	COMMENTS
DICKENSON GOLD MINES - Balmer Lake (NW) (continued)	Chukuni R. upstream of Balmer Creek	08/15/78	grab	78-46	N.L.	7.9	46	
	Chukuni River down- stream of Balmer Creek	08/15/78	grab	78-47	N.L.	8.0	50	
	Balmer Creek upstream of Balmer Lake	08/16/78	grab	78-48	N.L.	7.2	75	
	Balmer Creek down- stream of Balmer Lake	08/16/78 08/18/80	grab grab	78-49 M3-80-56	N.L. >100%	7.1 7.5	500	- 10% mortality in 100%
	Tailings Pond Decant	08/18/80	grab	M3-80-54	7%	6.7		
DOFASCO - Hamilton (WC)	Blast Furnace cooling water with Stretford liquid	10/03/77 10/03/77	grab grab	76-116 76-116	>100% N.L.*	8.0	530	- 30% mortality in 100% - * 48 hr. LC50 at 50%
	Stretford Liquor	10/03/77	grab	76-117	0.09	9.1	90000	
	Lagoon overflow with Stretford liquor	08/05/75 10/03/77 10/03/77	grab grab grab		N.L. N.L.* N.L.*			- fathead minnow used (P. Pomelas) - * 24hr. - * 24hr.
	Blast Furnace cooling water sewer	03/13/78 03/13/78	grab grab	78-9 78-9	<30% 24%	7.4 7.8	650 600	- 30% killed all fish in 48 hrs.
	Bay front cooling water sewer	03/13/78 03/13/78	grab grab	78-10 78-10	38%* N.L.	8.0 8.0	465 465	- * 72 hr LC50

DATA SUMMARY SHEET

COMPANY NAME and LOCATION	EFFLUENT	SAMPLE DATE M/ D/ Y	SAMPLING METHOD	TEST NO.	96-HOUR -LC 50	pH	CONDUCTIVITY	COMMENTS
DOFASCO - Hamilton (WC) (continued)	Intake (Service Water)	03/13/78	grab	78-11	N.L.*	7.8	445	- * 24 hr.
		08/09/78	grab	M2-78-213	N.L.	7.8	520	
		08/10/78	grab	M2-78-216	N.L.	7.83	500	
		08/11/78	grab	M2-78-220	N.L.	7.9	490	
		08/15/78	grab	M2-78-224	N.L.	8.0	540	
		08/16/78	grab	M2-78-228	N.L.	8.2	490	
		08/17/78	grab	M2-78-231	N.L.	8.0	480	
		08/22/78	grab	M2-78-234	N.L.	7.1	440	
		08/23/78	grab	M2-78-239	N.L.	7.9	490	
		08/24/78	grab	M2-78-242	N.L.	8.2	495	
		08/29/78	24hr comp.	M2-78-248	N.L.	8.0	480	
		08/30/78	24hr comp.	M2-78-252	N.L.	8.5	480	
		08/31/78	24hr comp.	M2-78-256	N.L.	7.8	490	
		09/06/78	24hr comp.	M2-78-258	N.L.	8.5	490	
		09/07/78	24hr comp.	M2-78-262	N.L.	7.3	490	
		09/08/78	24hr comp.	M2-78-266	N.L.	7.5	400	
		09/12/78	24hr comp.	M2-78-272	N.L.	8.0	410	
		09/13/78	24hr comp.	M2-78-276	N.L.	7.7	554	
	Turbo Blower	08/10/78	grab	M2-78-217	N.L.	8.25	50	
		08/11/78	grab	M2-78-221	N.L.	8.2	100	
		09/12/78	grab	M2-78-274	77%	9.2	75	
		09/13/78	grab	M2-78-279	N.L.	8.0	510	
		09/14/78	grab	M2-78-280	N.L.	8.3	500	
	Coke Plant (oven) & Melt Shop	08/05/75	grab		N.L.			- P. Promelas used
		08/05/75	grab		<100%			- unaerated - 100% killed all fish in 4 hrs.
		08/05/75			68.2%			- unaerated
		08/05/75			50%			- unaerated
		08/05/75			38%			- continuous flow
		03/10/76	grab	76-61	<56%	7.7	540	- unaerated - 56% killed all fish in 72 hrs.

DATA SUMMARY SHEET

COMPANY NAME and LOCATION	EFFLUENT	SAMPLE DATE M/ D/ Y	SAMPLING METHOD	TEST NO.	96-HOUR -LC 50	pH	CONDUCTIVITY	COMMENTS
DOFASCO - Hamilton (WC) (continued)		03/10/76	grab	76-62	<10%	8.2	1410	- unaerated - 10% killed all fish in 2 hrs. with ammonium thiocyanate
		03/10/76	grab	76-62	4.2%	8.2	1410	- unaerated - with ammonium thiocyanate
		03/13/78	grab	78-8	N.L.*	7.9	480	- * at 50%
		03/13/78	grab	78-8	N.L.	7.9	480	
		08/09/78	grab	M2-78-212	N.L.	7.4	400	
		08/10/78	grab	M2-78-215	N.L.	7.45	610	
		08/11/78	grab	M2-78-219	N.L.	7.8	540	
		08/15/78	grab	M2-78-223	N.L.	7.3	590	
		08/16/78	grab	M2-78-227	N.L.	7.45	540	
		08/17/78	grab	M2-78-230	N.L.	7.3	590	
		08/22/78	grab	M2-78-233	N.L.	7.3	620	
		08/23/78	grab	M2-78-238	100%	7.5	700	
		08/29/78	24hr comp.	M2-78-241	N.L.	7.5	600	
		08/30/78	24hr comp.	M2-78-247	N.L.	7.1	580	
		08/31/78	24hr comp.	M2-78-255	N.L.	7.1	600	
		09/07/78	24hr comp.	M2-78-264	N.L.	7.3	480	
		09/08/78	24hr comp.	M2-78-268	N.L.	8.0	490	
		09/12/78	24hr comp.	M2-78-275	N.L.	8.0	470	
		09/13/78	24hr comp.	M2-78-278	N.L.	7.2	560	
	Silicon Plant	08/24/78	grab	M2-78-226	89%	9.7	370	- white coloured effluent
		08/24/78	grab	M2-78-245	90%	9.55	430	- green coloured effluent
		08/30/78	grab	M2-78-253	24%	10.8	480	- LC50 range 15-40%
		09/06/78	grab	M2-78-260	>100%	10.0	325	- 20% mortality in 100%
		09/07/78	grab	M2-78-265	>100%	9.5	390	- 30% mortality in 100%
		09/08/78	grab	M2-78-269	78%	9.5	380	
	Boiler House	08/17/78	grab	M2-78-225	N.L.	9.1	630	
		08/23/78	grab	M2-78-235	N.L.	7.5	520	
		08/24/78	grab	M2-78-243	N.L.	8.0	500	
		08/29/78	grab	M2-78-249	N.L.	8.0	490	

DATA SUMMARY SHEET

COMPANY NAME and LOCATION	EFFLUENT	SAMPLE DATE M/ D/ Y	SAMPLING METHOD	TEST NO.	96-HOUR -LC 50	pH	CONDUCT- TIVITY	COMMENTS
DOFASCO - Hamilton (WC) (continued)	Ottawa Street Sewer (slip)	07/10/69	grab	69-36	77.5%			- unaerated, red belly dace used (C. eos)
		08/05/75	grab		N.L.			- fathead minnows used (P.promelas)
		05/10/76	grab	76-63	50%	7.2	355	- unaerated
		08/09/78	grab	M2-78-211	N.L.	8.4	560	
		08/10/78	grab	M2-78-214	N.L.	8.7	510	
		08/11/78	grab	M2-78-218	N.L.	8.3	500	
		08/15/78	grab	M2-78-222	N.L.	8.6	510	
		08/16/78	grab	M2-78-226	N.L.	8.5	470	
		08/22/78	grab	M2-78-232	N.L.	8.3	500	
		08/23/78	grab	M2-78-229	78%	8.4	500	- LC50 range 60-100%
		08/24/78	grab	M2-78-240	N.L.	8.5	500	
		08/29/78	24hr comp.	M2-78-246	100%	8.5	500	
		08/30/78	24hr comp.	M2-78-251	N.L.	7.5	500	
		08/31/78	24hr comp.	M2-78-254	N.L.	8.0	500	
		08/06/78	24hr comp.	M2-78-259	N.L.	8.0	500	
		09/07/78	24hr comp.	M2-78-263	N.L.	8.0	520	
		09/08/78	24hr comp.	M2-78-267	N.L.	8.0	490	
		09/12/78	24hr comp.	M2-78-273	N.L.	8.5	450	
		09/13/78	24hr comp.	M2-78-247	N.L.	8.2	550	
DOME MINE - Timmins (NE)	Tailings Pond Decant	10/28/80	grab	80-202	4%	8.7	770	
DOMTAR CHEMICALS - Trenton (SE)	Outlet for Oilskimmer	07/06/77	grab	M2-77-45	70%	6.5	235	- LC50 range 50-100%
	South Ditch	07/06/77	grab	M2-77-44	N.L.	6.7	570	

DATA SUMMARY SHEET

COMPANY NAME and LOCATION	EFFLUENT	SAMPLE DATE M/ D/ Y	SAMPLING METHOD	TEST NO.	96-HOUR -LC 50	pH	CONDUCT- TIVITY	COMMENTS
DOMTAR CONSTRUCTION - Thorold (WC)	Final	04/23/80	grab	80-57	<30%*	7.3	310	- * 100% mortality after 48 hrs.
		12/09/80	grab	80-210	14%	7.0	335	
DOMTAR FINE PAPERS LTD. - Cornwall (SE)	Discharge of Clarifier	07/23/76	grab	M2-76-29	76%	6.5	950	- unaerated - LC50 range 56-100%
		06/28/77	grab	M2-77-42	94%	6.4	1400	
		10/15/80	grab	80-199	77%	9.8	580	
DOMTAR FINE PAPERS - St. Catherines (WC)	Final	04/23/80	grab	80-54	<30%*	7.4	375	- * 90% mortality in 96 hrs.
		10/07/80	grab	80-196	90%	7.1	438	
DOMTAR PACKING LTD. - Red Rock (NW)	Final	06/16/75			28%			- steam stripper not in operation - unaerated
		06/24/75			49%	7.3	195	
		07/07/75			25%			
		07/14/75			22%			- unaerated, continuous flow
		08/02/77	grab	M1-77-53	N.L.	6.5	495	- " " "
		09/13/77	grab	M1-77-90	>100%	8.7	380	- 30% mortality in 100% at 24hr.
		09/13/77	grab	M1-77-90	<65%			- 95% mortality in 65% at 96 hrs.
DOMTAR PACKING PAPERS - St. Catherines (WC)		07/07/80	grab comp.	M3-80-1	22%	7.7	750	- Lock Lomand dilution water used
		07/22/80	4hr grab	M3-80-18	30%	8.8		
		07/30/80	comp.					
		07/30/80	4hr grab	M3-80-27	<30%	9.9	800	
		08/25/80	comp.					
		08/25/80	4hr grab	M3-80-61	N.L.	7.3		
		08/25/80	comp.					- Domatar Research well water used
		08/25/80	4hr grab	M3-80-61	>100%	7.3		
		10/20/80	comp.					
		10/20/80	4hr grab	80-200	30%	8.6	510	

DATA SUMMARY SHEET

COMPANY NAME and LOCATION	EFFLUENT	SAMPLE DATE M/ D/ Y	SAMPLING METHOD	TEST NO.	96-HOUR -LC 50	pH	CONDUCTIVITY	COMMENTS
DOMTAR PACKING PAPERS - St. Catherines (WC) (continued)	Uncontaminated stream	07/07/80	2.5hr grab	M3-80-2	N.L.	7.6	150	
		07/22/80	4hr grab comp.	M3-80-19	70%	7.3	195	
	Clarifier Outfall	07/07/80	2.5hr grab	M3-80-3	37%	6.8	470	
		07/22/80	4hr grab comp.	M3-80-20	34%	6.9	550	
	Low suspended solids stream	07/07/80	2.5hr grab	M3-80-4	<30%	9.7	1470	
		07/22/80	4hr grab comp.	M3-80-21	<30%	10.5	1300	
DOMTAR PACKAGING LTD. - Trenton (SE)	Process Effluent & Vacuum Seals	05/03/76	grab	76-57	17%	7.1	355	
		05/03/76	grab	76-57	<3.2%	7.1	355	- unaerated - 3.2% killed all fish in 48 hrs.
		09/13/76	grab	M2-76-58	4.2%	7.35	2300	- unaerated LC50 range 3.2-5.6%
		09/13/76	grab	M2-76-58	13.5%	7.35	2300	- LC50 range 10-18%
	Process Effluent (White Water)	08/23/76	grab	M2-76-42	7.6%			
		08/23/76	grab	M2-76-43	<5.6%			- unaerated - 5.6% killed all fish in 48 hrs.
		06/13/77	grab	M2-77-16	24%	7.5	2200	- LC50 range 20-30%
		07/26/77	grab	M2-77-63	28%	7.7	1320	- LC50 range 20-40%
		07/26/77	grab	M2-77-65	33%	8.5	6600	
		03/22/78	grab	M2-78-7	7.2%	7.4	7100	
		05/02/78	grab	M2-78-14	2.3%	8.5	9500	
		05/26/80	grab	80-75	6%	7.0	5000	

DATA SUMMARY SHEET

COMPANY NAME and LOCATION	EFFLUENT	SAMPLE DATE M/ D/ Y	SAMPLING METHOD	TEST NO.	96-HOUR -LC 50	pH	CONDUCTIVITY	COMMENTS
DOMTAR PACKAGING LTD. - Trenton (SE) (continued)	Economizer Pad Drainage	09/13/76	grab	M2-76-59	N.L.	6.9	35	- unaerated
		06/13/77	grab	M2-77-17	N.L.	7.9	240	- unaerated
		03/22/78	grab	M2-78-2	N.L.	7.4	260	
	Vacuum Pump Seals Over- flow	05/02/78	grab	M2-79-9	24%	8.5	2950	- O ₂ levels were far too low at the end of the test - sample had a very high BOD ₅
		05/26/80	grab	80-72	7%	7.0	2500	
	Sulphite Liquor	03/08/76	grab	76-17	<0.75%	7.25	350	- unaerated - 0.75% killed all fish in 44 hrs.
		03/08/76	grab	76-17	6.6%	7.5	350	
	Vacuum Pump Seal	06/13/77	grab	M2-77-22	14%	8.1	940	- LC50 range 10-20%
		07/26/77	grab	M2-77-66	13%	7.8	2700	
		03/27/78	grab	M2-78-6	N.L.	7.3	430	
		05/02/78	grab	M2-78-13	52%	7.9	730	
		03/26/80	grab	80-73	N.L.*	7.4	320	* at 65%
	Digester Drains	09/13/76	grab	M2-76-61	<100%	8.95	855	- unaerated - 100% killed all fish in 12 hrs.
		06/13/77	grab	M2-77-67	N.L.	9.0	320	
		07/26/77	grab	M2-77-19	N.L.	7.0	190	
		03/22/78	grab	M2-78-3	N.L.	9.3	630	
		05/02/78	grab	M2-78-10	N.L.	9.7	500	
		05/26/80	grab	80-74	>100%	7.2	620	- 10% mortality in 100%
	Economizer Effluent	09/13/76	grab	M2-76-60	N.L.	7.5	190	
		06/13/77	grab	M2-77-18	N.L.	7.8	220	
		07/26/77	grab	M2-77-70	N.L.	6.2	190	
		03/22/78	grab	M2-78-1	N.L.	7.7	750	
		05/02/78	grab	M2-78-8	N.L.	7.4	220	
		05/26/80	grab	80-69	N.L.	7.7	190	

DATA SUMMARY SHEET

COMPANY NAME and LOCATION	EFFLUENT	SAMPLE DATE M/ D/ Y	SAMPLING METHOD	TEST NO.	96-HOUR -LC 50	pH	CONDUCTIVITY	COMMENTS
DOMTAP PACKAGING LTD. - Trenton (SE) (continued)	Cooling Water	09/13/76	grab	M2-76-63	N.L.	7.8	190	- unaerated
		06/13/77	grab	M2-77-21	N.L.	7.5	230	- unaerated
		07/26/77	grab	M2-77-64	N.L.	8.5	270	
		03/22/78	grab	M2-78-4	N.L.	8.1	365	
		05/02/78	grab	M2-78-11	N.L.	7.4	220	
		05/26/80	grab	80-71	>100%	8.1	195	- 20% mortality in 100%
	Combined Sample	06/13/77	a series of grabs	lab sample	47%	8.3	820	
		07/26/77	"	M2-77-69	76%	8.8	690	
		03/22/78	"	lab sample	39%	7.7	1470	- LC50 range 30-50%
		05/02/78	"	lab sample	25%	8.6	1575	
		05/26/80	"	80-76	<30%	7.5	1035	- lower concentrations had very low O ₂ levels. - 70% mortality in 30% after 96hrs.
	Boiler House	06/13/76	grab	M2-76-42	<100%	11.05	625	- 100% killed all fish in 1.5 hr.
		06/13/77	grab	M2-77-20	44%	11.3	640	- LC50 range 30-65%
		06/13/77	grab	M2-77-22	N.L.*	11.3	640	- pH adjusted to 7.0 * at 65%
		07/26/77	grab	M2-77-68	56%	10.8	580	
		07/26/77	grab	M2-77-68	N.L.	10.8	580	- pH adjusted to 6.7
		03/22/78	grab	M2-78-5	28%	11.1	910	- LC50 range 20-40%
		05/02/78	grab	M2-78-12	40%	12.2	940	
		05/26/80	grab	80-68	56%	10.6	880	
	Economizer Zero	05/26/80	grab	80-70	>100%	7.8	190	- 10% mortality in 100%

DATA SUMMARY SHEET

COMPANY NAME and LOCATION	EFFLUENT	SAMPLE DATE M/ D/ Y	SAMPLING METHOD	TEST NO.	96-HOUR -LC 50	pH	CONDUCTIVITY	COMMENTS
DOW BADISCHE - Arnprior (SE)	Storm Sewer Manhole	07/30/76	grab	M2-76-31	N.L.	7.5	130	- unaerated
		06/03/77	grab	M2-77-13	N.L.	7.4	135	- unaerated
	Process Sewer Manhole	07/30/76	grab	M2-76-33	80%	6.6	135	- unaerated
		06/03/77	grab	M2-77-14	N.L.	7.9	140	
	Final Effluent	06/02/75	grab		N.L.			- unaerated
DOUGLAS AIRCRAFT - Malton (C)	3rd Street Sewer	03/03/76	grab	76-9	N.L.	8.6	260	- unaerated
		06/21/76	grab	76-109	N.L.	8.9	290	- unaerated
		05/10/77	grab	77-53	N.L.	8.2	180	
		05/31/77	grab	77-67	N.L.	9.0	300	
		06/21/77	grab	77-89	N.L.	8.1	200	
		07/12/77	grab	77-101	N.L.	7.7	430	
		07/11/78	grab	78-35	>100%	8.0	210	- unaerated - 20% mortality in 100%
		07/11/78	grab	78-35	N.L.	8.0	210	
		09/13/78	grab	78-57	N.L.	7.7	210	
		09/13/78	grab	78-57	N.L.	7.7	210	- unaerated
		06/21/79	24hr comp.	M2-79-3	N.L.	6.5	245	
		07/19/79	" "	M2-79-13	88%	7.5	253	
		08/16/79	" "	M2-79-34	>100%	8.2	200	- 10% mortality in 100%
	54" Sewer (1st Sluice)	06/21/76	grab	76-106	86%	7.55	380	- unaerated
		07/19/76	grab	76-137	100%	8.7	300	- 10% mortality in 100%
		05/10/77	grab	77-54	N.L.	9.4	1240	
		05/31/77	grab	77-66	N.L.	8.1	820	
		06/21/77	grab	77-88	N.L.	8.4	220	
		07/12/77	grab	77-100	N.L.	7.6	910	
		07/11/78	grab	78-34	N.L.	7.8	280	- unaerated
		07/11/78	grab	78-34	N.L.	7.8	280	

DATA SUMMARY SHEET

COMPANY NAME and LOCATION	EFFLUENT	SAMPLE DATE M/ D/ Y	SAMPLING METHOD	TEST NO.	96-HOUR -LC 50	pH	CONDUCTIVITY	COMMENTS
DOW CHEMICAL - Sarnia (SW) (continued)		09/13/78	grab	78-56	<100%	10.2	780	- 60% mortality in 100%
		09/13/78	grab	78-56	>100%	10.2	780	- 40% mortality in 100% unaerated
		06/21/79	24hr comp.	M2-79-1	N.L.	8.4	364	
		07/19/79	" "	M2-79-11	N.L.	8.6	975	
		08/16/79	" "	M2-79-32	N.L.	8.5	610	
	Acid Drain	03/02/76	grab	76-10	36%	11.1	2900	- unaerated
		06/21/76	grab	76-105	8.6%	12.0	6600	- unaerated LC50 range 5.6 - 13.6%
		06/21/76	grab	76-105	>100%	12.0	66000	- unaerated 10% mortality in 100% pH adjusted to 7.2
		06/21/79	24hr comp.	M2-79-2	11%	12.2	8590	
		06/21/79	" "	M2-79-2	88%	12.2	8590	- pH adjusted to 6.2
		07/19/79	" "	M2-79-12	N.L.	12.1	13000	
		08/16/79	" "	M2-79-33	32%	10.4	2870	
		08/16/79	" "	M2-79-33	N.L.	10.4	2870	- pH adjusted to 7.1
	42" Sewer	06/21/76	grab	76-103	>100%	8.25	235	- unaerated, 20% mortality 100%
		10/18/76	grab	76-174	N.L.			- unaerated
		10/18/76	grab	76-174	<100%			- 10% mortality in 100%
	Intake (Service Water)	10/18/76	grab	76-173	N.L.			- unaerated
		10/18/76	grab	76-173	N.L.			
	D.O.E.O.	06/28/76	grab	76-111	N.L.	8.25	175	- unaerated
		10/18/76	grab	76-178	N.L.			- unaerated
		10/18/76	grab	76-178	>100%			- 20% mortality in 100%
	Steam Plant	06/28/76	grab	76-110	N.L.	8.1	175	- unaerated
		10/18/76	grab	76-179	>100%			- unaerated 10% mortality in 100%
		10/18/76	grab	76-179	N.L.			

DATA SUMMARY SHEET

COMPANY NAME and LOCATION	EFFLUENT	SAMPLE DATE M/ D/ Y	SAMPLING METHOD	TEST NO.	96-HOUR -LC 50	pH	CONDUCTIVITY	COMMENTS
DOW CHEMICAL - Sarnia (SW) (continued)	4th Street Sewer	06/21/76	grab	76-107	N.L.	8.2	2500	- unaerated
		10/18/76	grab	76-177	N.L.			- unaerated
		10/18/76	grab	76-177	>100%			- 10% mortality in 100%
	2nd Street Sewer	06/21/76	grab	76-108	N.L.	9.8	170	- unaerated
		10/18/76	grab	76-176	>100%			- unaerated
		10/18/76	grab	76-176	>100%			- 20% mortality in 100%
	48" Sewer	06/21/76	grab	76-104	N.L.	8.7	180	- unaerated
		10/18/76	grab	76-175	100%			- unaerated
	Disposal site in Scott Road Dump	07/26/79	grab	M2-79-21	N.L.	7.9	8810	- 10% mortality in 100%
DUPONT OF CANADA - Corunna (SW)	Final Effluent	07/21/76	grab	M2-79-15	N.L.	8.1	265	- unaerated
		07/24/79	grab		N.L.			
	Final Plant Effluent	06/16/77	grab	M2-77-27	N.L.	8.8	280	- unaerated
		06/16/77	grab	M2-77-27	N.L.			
	Total Process Effluent	03/09/76	grab	76-16	38%	7.05	600	- unaerated
		08/16/76	grab	M2-76-41	42%	8.25	415	- unaerated
	Mixing Chamber before discharge to river	06/16/77	grab	M2-77-24	81%	9.5	1100	LC50 range 32-56%
		08/08/77	grab	M2-77-89	N.L.	7.8	320	

DATA SUMMARY SHEET

COMPANY NAME and LOCATION	EFFLUENT	SAMPLE DATE M/ D/ Y	SAMPLING METHOD	TEST NO.	96-HOUR -LC 50	pH	CONDUCTIVITY	COMMENTS
DUPONT OF CANADA - Maitland (SE) (continued)	Sanitary Sewer (Manhole after Chlorin- ation Plant)	06/16/77	grab	M2-77-23	<100%	7.7	660	- unaerated - 100% killed all fish in 0.5 hrs.
		06/16/77	grab	M2-77-23	<100%	7.7	660	- unaerated - 100% killed
	Main Plant (before mixing with T.E.L. plant discharge)	08/08/77	grab	M2-77-88	N.L.	7.6	280	
	T.E.L. Plant (before mixing with main plant)	08/08/77	grab	M2-77-87	N.L.	8.8	1900	
- North Bay (NE)	Final Effluent	09/20/76	grab	M1-76-44	N.L.	7.4	155	
		07/11/77	grab	M1-77-34	N.L.	7.3	365	- unaerated
		07/11/77	grab	M1-77-34	N.L.	7.3	365	
DUSSEK BROTHERS - Belleville (SE)	Surface Runoff collection ditch	07/19/76	grab	M2-76-27	16%	8.0	255	- unaerated
		08/16/76	grab	M2-76-42	13.5%	7.7	280	- unaerated LC50 range 10-18%
E.B. EDDY FOREST PRODUCTS LTD. - Espanola (NE)	#1 Bleach Plant (inplant sample)	03/07/77	grab	77-16	13%	2.8	2000	
		03/30/77	grab	77-38	14%	2.6	1700	- LC50 range 10-20%
		05/11/77	grab	77-59	14%	2.3	2800	- LC50 range 10-20%
		05/30/77	grab	M1-9-77	<10%	2.8	1650	- unaerated - 10% killed all fish in 4 hrs.
		05/30/77	grab	M1-9-77	<65%	2.8	1650	- 65% killed all fish in 0.5 hrs.
		06/21/77	grab	M1-77-27	14%	3.6	1020	- LC50 range 10-20%
		08/08/77	grab	M1-77-61	N.L.*	6.8	350	- * at 10%
		08/23/77	grab	M1-77-72	7.1%	3.0	1300	- LC50 range 5-10%

DATA SUMMARY SHEET

COMPANY NAME and LOCATION	EFFLUENT	SAMPLE DATE M/ D/ Y	SAMPLING METHOD	TEST NO.	96-HOUR -LC 50	pH	CONDUCTIVITY	COMMENTS
E.B. EDDY FOREST PRODUCTS LTD. - Espanola (NE) (continued)		09/13/77	grab	M1-77-84	N.L.*	3.4	710	- * 24hr - LC50 at 10%
		04/24/78	grab	78-19	24%			- LC50 range 20-30%
		04/24/78	grab	78-19	37%			- pH adjusted
		07/30/79	grab	79-97	13%	2.3	1320	- LC50 range 10-28%
		07/30/79	grab	79-97	28%	2.3	1320	- pH adjusted to 6.3
	#2 Bleach Plant (inplant sample)	03/07/77	grab	77-17	8.2%	2.8	3600	
		03/30/77	grab	77-37	14%	6.3	2900	- LC50 range 10-20%
		05/11/77	grab	77-60	23.7%	5.1	3400	
		05/30/77	grab	M1-10-77	<10%	2.8	4000	- unaerated - 10 % killed all fish in 3 hrs.
		05/30/77	grab	M1-10-77	<65%	2.8	4000	- 65% killed all fish in 0.5 hrs.
		06/21/77	grab	M1-77-29	<2%	1.8	8000	- 2% killed all fish in 4 hrs.
		08/08/77	grab	M1-77-62	N.L.*	6.2	410	- * at 10%
		08/23/77	grab	M1-77-73	7.1%	3.8	3300	- LC50 range 5-10%
		09/13/77	grab	M1-77-85	N.L.*	7.0	4000	- * 24hr - LC50 at 10%
		04/24/78	grab	78-20	14%	3.6	3200	- LC50 range 10-20%
		04/24/78	grab	78-20	4.7%	3.6	3200	- unaerated
		04/24/78	grab	78-20	<30%	3.6	3200	- pH adjusted to 7.7 - 30% killed all fish in 48 hrs.
		04/24/78	grab	78-20	<10%	3.6	3200	- pH adjusted to 7.7 - 10% killed all fish in 96 hrs.
		07/30/79	grab	79-98	37.5%	6.5	3600	
	Intake (Power Canal or Service Water)	03/07/77	grab	77-19	N.L.	6.3	140	
		03/30/77	grab	77-39	N.L.	6.4	170	
		05/11/77	grab	77-58	N.L.	6.8	65	
		05/30/77	grab	M1-8-77	N.L.	7.2	62	- unaerated
		05/30/77	grab	M1-8-77	N.L.	7.2	62	
		06/21/77	grab	M1-77-27	N.L.	7.2	120	
		08/09/77	grab	M1-77-64	N.L.	6.6	92	
		08/23/77	grab	M1-77-75	N.L.	6.9	62	
		09/13/77	grab	M1-77-87	N.L.*	6.6	100	- * 72 hr
		04/24/78	grab	78-23	N.L.	7.5	210	

DATA SUMMARY SHEET

COMPANY NAME and LOCATION	EFFLUENT	SAMPLE DATE M/ D/ Y	SAMPLING METHOD	TEST NO.	96-HOUR -LC 50	pH	CONDUCT- TIVITY	COMMENTS
E.B. EDDY FOREST PRODUCTS LTD. - Espanola (NE) (continued)		04/24/78	grab	78-23	N.L.	7.5	210	- unaerated
		07/30/79	grab	79-100	N.L.	7.2	600	
		07/29/80	grab	80-121	N.L.	7.2	72	
		08/26/80	grab	80-146	N.L.	7.3	74	
	Final Effluent (Outfall Pond or Whole Mill)	05/31/76	grab	M1-76-2	7.5%	3.2	1500	- LC50 range 5.6-10% unaerated
		05/31/76	gram	M1-76-2	24%	3.2	1500	- LC50 range 18-32% - unaerated pH adjusted to 6.9
		03/07/77	grab	77-18	19%	3.1	1600	
		03/30/77	grab	77-36	84.3%	6.4	1000	
		05/11/77	grab	77-61	35.4%	4.4	1000	
		05/30/77	grab	M1-7-77	14%	7.1	1225	- unaerated - LC50 range 10-20%
		05/30/77	grab	M1-7-77	<65%	7.1	1225	- 65% killed all fish in 12 hrs.
		06/21/77	grab	M1-77-26	17%	6.0	1000	
		08/08/77	grab	M1-77-63	>10%	9.3	890	- 10% mortality is 10%
		08/23/77	grab	M1-77-74	12%	7.4	1300	
		09/13/77	grab	M1-77-86	23%*	6.7	1200	- from foam pond * 24 hr LC50
		04/24/78	grab	78-18	44%	6.8	1250	- LC50 range 30-65%
		04/24/78	grab	78-18	12%	6.8	1250	- unaerated
		04/24/78	grab	78-18	>45%			- 20% mortality in 45%
		07/30/79	grab	79-95	60%	6.3	940	
		07/29/80	grab	80-122	100%	6.8	710	- only hardwood operation was functioning
		08/26/80	grab	80-145	35%	7.7	980	
	Woodroom	05/31/76	grab	M1-76-3	12%	4.8	175	- unaerated
		05/31/76	grab	M1-76-3	12%	4.8	175	- unaerated - pH adjusted to 7.0
		04/24/78	grab	78-22	11%	4.7	180	
		07/30/79	grab	79-101	4.2%	4.3	210	
		07/30/79	grab	79-101	<10%	4.3	210	- pH adjusted to 7.1 - 10% killed all fish in 24 hrs.
		07/29/80	grab	80-123	4%	4.7	365	
		07/29/80	grab	80-123	2.2%	4.7	365	- stored for 1 week
		07/29/80	grab	80-124	5.8%	6.9		- treated

DATA SUMMARY SHEET

COMPANY NAME and LOCATION	EFFLUENT	SAMPLE DATE M/ D/ Y	SAMPLING METHOD	TEST NO.	96-HOUR -LC 50	pH	CONDUCTIVITY	COMMENTS
E.B. EDDY FOREST PRODUCTS LTD. - Ottawa (NE)	Main Sewer (inplant sample)	07/30/79	grab	79-96	42%	5.7	1200	- LC50 range 32-56%
	Kraft Mill (inplant sample)	07/30/79	grab	79-96	42%	10.7	355	- LC50 range 32-56%
- Ottawa (SE)	Speciality Mill (after clarifier)	07/20/77	grab	M2-77-28	<50%	7.7	150	- 50% killed all fish in 72 hrs.
		07/20/77	grab	M2-77-28	65%	7.7	150	
		08/04/77	grab	M2-77-75	N.L.	6.2	115	
		08/04/77	grab	M2-77-76	N.L.	6.0	110	
		08/04/77	grab	M2-77-77	N.L.	6.0	110	
		08/04/77	grab	M2-77-78	N.L.	6.9	110	
		08/04/77	6-gr.comb.	M2-77-83	N.L.	7.2	110	
		09/07/77	grab	M2-77-110	100%	4.8	190	
		10/14/80	grab	80-197	86%	9.0	200	- clarifier being by-passed
	Board Mill Sewer	07/20/77	grab	M2-77-29	80%	7.2	160	- LC50 range 65-100%
		08/04/77	grab	M2-77-79	N.L.	5.7	135	- LC50 range 80-100%
		08/04/77	grab	M2-77-80	90%	5.0	160	
		08/04/77	grab	M2-77-81	N.L.	5.2	125	
		08/04/77	grab	M2-77-82	N.L.	5.6	165	
		08/04/77	6-gr.comb.	M2-77-84	N.L.	6.0	150	
		09/07/77	grab	M2-77-111	N.L.	5.5	170	
	Speciality Mill (before clarifier)	08/04/77	grab	M2-77-71	N.L.	6.4	105	
		08/04/77	grab	M2-77-72	N.L.	5.6	105	
		08/04/77	grab	M2-77-73	90%	4.8	105	
		08/04/77	grab	M2-77-74	N.L.	5.6	160	
		09/07/77	grab	M2-77-109	N.L.	5.9	190	

DATA SUMMARY SHEET

COMPANY NAME and LOCATION	EFFLUENT	SAMPLE DATE M/ D/ Y	SAMPLING METHOD	TEST NO.	96-HOUR -LC 50	pH	CONDUCTIVITY	COMMENTS
ELMIRA SEWAGE TREATMENT PLANT - Elmira (WC)	Final Effluent (before chlorination)	09/20/76	grab	76-157	N.L.	7.5	3000	
	Effluent	09/20/76	grab	76-158	38%	7.4	3500	- LC50 range 30-50%
		04/12/77	grab	77-43	59%	7.6	5500	- LC50 range 50-70%
	Influent (mixture of Elmira sewage & Uniroyal effluent)	04/12/77	grab	77-42	58%	7.6	4600	- LC50 range 50-70%
ESSO CHEMICAL OF CANADA LTD. - Sarnia (SW)	Pressure Sewer (Anthracite filter influent)	06/28/76	grab	76-112	<100%	8.1	250	- unaerated - 100% killed all fish in 24 hrs
		4/19/77	grab	77-46	N.L.	7.8	470	
		05/11/77	grab	77-50	>100%	8.8	370	- 30% mortality in 100%
		05/31/77	grab	77-63	<70%	7.3	400	- 70% killed all fish in 48 hrs
		07/12/77	grab	77-97	72%	7.9	260	- LC50 range 50-100%
	Final effluent	07/25/79	grab	M2-79-16	N.L.	7.9	280	
		08/02/79	grab	M2-79-31	>100%	7.3	345	- 48 hr - 10% mortality in 100%
		08/22/79	grab	M2-79-41	56%	7.9	275	
		07/30/80	grab	M2-80-9	N.L.			
		09/29/80	grab	M2-80-19	>100%			
	Pressure Sewer (Anthracite filter)	04/13/76	grab	76-49	51%	7.8	240	- unaerated
		06/28/76	grab	76-113	<75%	8.2	275	- 75% killed all fish in 48 hrs - unaerated
		07/19/76	grab	76-141	93%	7.3	330	- unaerated
		10/25/76	grab	76-185	N.L.	7.2	2200	
		10/25/76	grab	76-185	N.L.	7.2	2200	-unaerated
		04/18/77	grab	77-47	N.L.	8.0	450	
		05/10/77	grab	77-51	97%	8.8	390	
		05/31/77	grab	77-64	<70%	7.9	440	- 70% killed all fish in 33 hrs

DATA SUMMARY SHEET

COMPANY NAME and LOCATION	EFFLUENT	SAMPLE DATE M/ D/ Y	SAMPLING METHOD	TEST NO.	96-HOUR -LC 50	pH	CONDUCTIV- TIVITY	COMMENTS
ESSO CHEMICAL OF CANADA LTD. - Sarnia (SW)		06/21/77	grab	77-87	N.L.	7.5	520	
		07/12/77	grab	77-98	N.L.	8.0	265	
		07/11/78	grab	78-32	<70%	7.9	200	- unaerated - 70% killed all fish in 96 hrs
		07/11/78	grab	78-32	>100%	7.9	200	- 100% killed all fish in 96 hrs
ETHYL CORPORATION - Corunna (SW)	Final Effluent	07/12/76	grab	76-126	N.L.	7.6	1550	- unaerated
		05/10/77	grab	77-55	N.L.	7.5	1800	
		07/11/78	grab	78-36	N.L.	7.7	300	- unaerated
		07/11/77	grab	78-36	N.L.	7.7	300	
		08/22/78	grab	78-51	N.L.	8.2	1440	
		08/22/78	grab	78-51	N.L.	8.2	1440	- unaerated
		08/22/78	grab	78-51	N.L.	8.2	1440	- unaerated - sample agitated at 150C for 24 hrs. prior to testing
		09/12/78	grab	78-58	N.L.	7.2	1580	
		09/12/78	grab	78-58	N.L.	7.2	1580	- unaerated
		07/31/79	grab	M2-79-25	23%	10.6	1900	
		10/25/79	grab	79-162	N.L.	9.2	1500	
		03/05/80	grab	80-34	50%	8.8	2500	
		06/18/80	grab	M2-80-3	>100%			
		06/24/80	grab	M2-80-4	>100%			
		07/21/80	grab	M2-80-8	90%			
		07/28/80	grab	M2-80-9	N.L.			
		09/ /80	grab	M2-80-20	N.L.			
	Intake (Service Water)	07/12/76	grab	76-127	N.L.	8.3	210	- unaerated

DATA SUMMARY SHEET

COMPANY NAME and LOCATION	EFFLUENT	SAMPLE DATE M/ D/ Y	SAMPLING METHOD	TEST NO.	96-HOUR -LC 50	pH	CONDUCTIV- TIVITY	COMMENTS
FALCONBRIDGE								
- Emery Creek (NE)	Emery Creek	07/14/77	grab	M1-77-39	N.L.	7.6	420	
	(below bridge)	07/14/77	grab	M1-77-39	N.L.	7.6	420	- unaerated
- Fecunis Lake (NE)	Fecunis Lake	08/15/77	grab	M1-77-67	32%	5.0	980	- unaerated
		08/15/77	grab	M1-77-67	<100%	5.0	980	- 100% killed all fish in 72 hrs
- Moose Lake (NE)	Moose Creek	08/15/77	grab	M1-77-65	13%	4.5	1100	- unaerated
	Effluent	08/15/77	grab	M1-77-65	<100%	4.5	1100	- 100% killed all fish in 96 hrs
	Moose Lake (below treatment plant)	09/08/76	grab	M1-76-30	N.L.	7.0	920	- unaerated
	Moose Lake	06/14/76	grab	M1-76-7	N.L.	6.6	975	
		09/08/76	grab	M1-76-31	>100%	7.0	810	- unaerated
		08/15/77	grab	M1-77-66	>100%	7.5	780	- unaerated
		08/15/77	grab	M1-77-66	>100%	7.5	780	- 10% mortality in 100%
FIBERGLASS OF CANADA								
- Sarnia (SW)	Final Effluent	07/19/76	grab	76-134	N.L.	7.5	195	- unaerated
	Treatment Sump	07/19/76	grab	76-136	17.5%	7.35	13000	- unaerated - LC50 range 10-30%
	(Scott Road	07/26/79	grab	M2-79-18	7%	7.9	11000	
	Dump)	10/29/79	grab	79-164	7%	7.8	14000	
	Scott Road Dump	10/29/79	grab	79-163	2.2%	8.7	12000	
	(before treatment)							
FORD MOTOR CO.								
- St. Thomas (SW)	Influent to	12/12/78	grab	78-80	N.L.	7.4	460	
	impounding basin							
	(inplant sample)							

DATA SUMMARY SHEET

COMPANY NAME and LOCATION	EFFLUENT	SAMPLE DATE M/ D/ Y	SAMPLING METHOD	TEST NO.	96-HOUR -LC 50	pH	CONDUCT- TIVITY	COMMENTS
FORD MOTOR CO. - St. Thomas (SW) (continued)	Combined Effluent at Dodd's Cr.	12/12/78	grab	78-81	N.L.	7.3	435	
	East Settling Lagoon (inplant sample)	12/12/78	grab	78-82	52%	7.0	750	- LC50 range 45-60%
- Windsor (SW)	Riverside Dr. pumping station	03/28/77	grab	77-26	<70%	7.3	430	- 70% killed 70% of fish in 48 hrs.
FREEDLAND INDUSTRIES - Kingsville (SW)	Final Effluent	08/18/75	grab		75%	10.7		
GENERAL MOTORS - St. Catharines (WC)	Creek leading from plant on east side	02/23/76	grab	76-5	N.L.	7.4	470	- unaerated
GENSTAR (BROCKVILLE CHEMICALS) - Brockville (SE)	Surface Runoff (ditch to St. Lawrence R.)	07/05/76	grab	M2-76-16	<10%	8.45	51000	- 10% killed all fish in 0.5 hr. unaerated
		07/05/76	grab	M2-76-16	<1.0%	8.45	51000	- 1.0% killed all fish in 1 hr. unaerated
		08/16/76	grab	M2-76-40	1.35%			- LC50 range 1-1.8%
		06/16/77	grab	M2-77-25	1.4%	9.1	6300	- LC50 range 1-2%
		08/08/77	grab	M2-77-85	1.7%	9.1	4000	
		08/25/77	grab	M2-77-104	1.8%	8.9	5300	

DATA SUMMARY SHEET

COMPANY NAME and LOCATION	EFFLUENT	SAMPLE DATE M/ D/ Y	SAMPLING METHOD	TEST NO.	96-HOUR -LC 50	pH	CONDUCT- TIVITY	COMMENTS
GENSTAR (BROCKVILLE CHEMICALS) - Brockville (SE) (continued)	Final Effluent	06/21/76	grab	M2-76-10	<10%	8.5	22000	- unaerated - 10% killed all fish in 0.5 hrs.
		06/21/76	grab	M2-76-10	<1.8%	8.5	22000	- unaerated - 1.8% killed all fish in 1.5 hrs.
		08/16/76	grab	M2-76-39	<0.56%			- unaerated - 0.56% killed all fish in 2 hrs.
		06/16/77	grab	M2-77-26	5.3%	6.6	6500	
		08/08/77	grab	M2-77-86	1.3%	9.7	3400	
		08/25/77	grab	M2-77-103	0.62%	10.3	4600	- LC50 range 0.5 - 0.75%
		08/25/77	grab	M2-77-106	16%	10.3	4600	- treated to remove NH ₃ (single pass)
		08/25/77	grab	M2-77-108	25%	10.3	4600	- treated to remove NH ₃ (double pass)
GREAT LAKES FOREST PRODUCTS LTD. (Formerly Reed Pulp & Paper Co.) - Dryden (NW) - Thunder Bay (NW)	Final	08/04/77	grab	M1-77-57	21%	9.6	450	
		07/28/80	grab	M3-80-34	1.3%	8.4		
		08/12/80	grab	M3-80-42	24%	10.3	1000	
		08/19/80	grab	M3-80-57	28%	3.2%		
	Effluent (on company property)	07/25/77	grab	M1-77-49	39%	5.9	1350	- LC50 range 30-50%
		07/15/80	24hr comp.	M3-80-9	33%	6.4	2200	
		07/29/80	24hr comp.	M3-80-30	30%	6.5	1600	
		08/05/80	24hr comp.	M3-80-35	20%	5.2	2000	
	Clean Water Effluent	07/15/80	24hr comp.	M3-80-10	N.L.	8.1	1100	
		07/29/80	24hr comp.	M3-80-31	N.L.	7.2	700	
		08/05/80	24hr comp.	M3-80-29	N.L.	7.8	750	

DATA SUMMARY SHEET

COMPANY NAME and LOCATION	EFFLUENT	SAMPLE DATE M/ D/ Y	SAMPLING METHOD	TEST NO.	96-HOUR -LC 50	pH	CONDUCTIVITY	COMMENTS
GULF OIL - Oakville (C)	Final Effluent (Oily Water Trap #4)	06/04/79	grab	79-42	N.L.*	8.2	880	- * 24hr
		06/04/79	grab	79-42	N.L.	8.2	880	
		12/12/79	grab	79-197	71%	4.0	630	- slop tank spill a few days before caused lethality
		12/17/79	grab	79-198	N.L.	7.75	418	
	Cooling Water	06/04/79	2 gr.comb.	79-41	N.L.*	7.9	285	- * 24hr
		06/04/79	2 gr.comb.	79-41	N.L.	7.9	285	- Traps 1 & 3
		12/12/79	3 gr.comb.	79-196	N.L.	8.35	274	- Traps 1,2 & 3
HAHN BRASS - New Hamburg	Final Effluent	09/02/75	grab		>100%			- unaerated - 40% mortality in 100%
HALEY INDUSTRIES - Haley Station (SE)	Inside #1 Plant	06/03/77	grab	M2-77-9	14%	12.1	9100	- LC50 range 10-20%
	Final Effluent	07/16/76	grab	M2-76-24	N.L.	7.6	780	
		06/03/77	grab	M2-77-10	25%	7.7	400	- LC50 range 20-30%
	#1 Plant Effluent	07/16/76	grab	M2-76-25	N.L.	7.4	330	
		06/03/77	grab	M2-77-9	>100%	12.1	8800	- pH adjusted to 6.6 40% mortality in 100%
HAWKESBURY MUNICIPAL DISCHARGE - Hawkesbury (SE)	Retaining Area	08/10/77	grab	M2-77-93	100%	7.5	500	
HOLMES INSULATION - Sarnia (SW)	Disposal Site in Scott Rd. Dump	07/26/79	grab	M2-79-22	N.L.	8.34	362	

DATA SUMMARY SHEET

COMPANY NAME and LOCATION	EFFLUENT	SAMPLE DATE M/ D/ Y	SAMPLING METHOD	TEST NO.	96-HOUR -LC 50	pH	CONDUCT- IVITY	COMMENTS
HOUDAILLE PLATING - Oshawa (C)	Manhole #27	07/21/75	grab		4.7%			- effluent discharge to sanitary sewer - unaerated
	Manhole #50	07/21/75	grab		N.L.			- effluent discharge to sanitary sewer - unaerated
IMPERIAL OIL REFINERY - Sarnia (SW)	#9 Separator	06/28/76	grab	76-116	N.L.	7.9	190	- unaerated
		10/25/76	grab	76-181	N.L.	7.5	190	- unaerated
		10/25/76	grab	76-181	N.L.	7.5	190	
	#3 Separator	06/28/76	grab	76-115	N.L.	8.2	175	- unaerated
		10/25/76	grab	76-180	N.L.	7.5	175	
		10/25/76	grab	76-180	N.L.	7.5	175	
	#12 Separator	06/28/76	grab	76-118	N.L.	8.0	175	- unaerated
		10/25/76	grab	76-183	N.L.	8.1	185	
		10/25/76	grab	76-183	>100%	8.1	185	- unaerated - 10% mortality in 100%
	#11 Separator	06/28/76	grab	76-118	N.L.	7.9	180	- unaerated
		10/25/76	grab	76-183	N.L.	7.95	185	
		10/25/76	grab	76-182	N.L.	7.95	185	- unaerated
	Bio-oxidation Plant	06/28/76	grab	76-114	N.L.	7.5	860	- unaerated
		10/25/78	grab	76-184	N.L.	7.65	780	
		10/25/76	grab	76-184	>100%	7.65	780	- unaerated - 30% mortality in 100%
		04/18/77	grab	77-48	N.L.	7.8	720	
		05/10/77	grab	77-52	N.L.	6.6	520	
		05/31/77	grab	77-65	N.L.	7.5	470	
		06/21/77	grab	77-95	N.L.	7.0	590	
		07/12/77	grab	77-99	N.L.	6.5	635	

DATA SUMMARY SHEET

COMPANY NAME and LOCATION	EFFLUENT	SAMPLE DATE M/ D/ Y	SAMPLING METHOD	TEST NO.	96-HOUR -LC 50	pH	CONDUCTIVITY	COMMENTS
IMPERIAL OIL REFINERY - Sarnia (SW) (continued)		07/11/78	grab	78-33	<100%	7.5	750	- 100% killed all fish in 72 hrs. - unaerated
		07/11/78	grab	78-33	N.L.	7.5	750	
		05/29/79	grab	79-26	N.L.*	7.6		- * 24 hr test
	Cooling Water (Separators - #3,9,11 & 12 combined)	05/29/79	4-grabs combined	79-27	N.L.*	8.2	190	- * 24 hr test
	Intake	10/25/76	grab	76-186	N.L.	7.4	240	- unaerated
	(Service	10/25/76	grab	76-186	N.L.	7.4	240	
	Water)	05/29/79	grab	79-25	N.L.*	8.3	200	- * 24hr test
	Tank farm	07/26/79	grab	M2-79-19	N.L.	8.5	1300	
INCO - Copper Cliff (NE)	Copper Cliff Creek (upstream of Inco WTP)	05/24/77	grab	M1-77-3	<10%	7.1	2150	- unaerated - 80% mortality in 10%
	Copper Cliff Creek (downstream of Inco WTP)	05/24/77	grab	M1-77-4	23%	7.8	2300	- unaerated
	Final Effluent (below STP)	08/30/77	grab	M1-77-80	>100%	9/6	2600	- unaerated pH adjusted to 6.5
		08/30/77	grab	M1-77-80	<100%	9.6	2600	20% mortality in 100% - 100% killed all fish in 0.5 hrs.

DATA SUMMARY SHEET

COMPANY NAME and LOCATION	EFFLUENT	SAMPLE DATE M/ D/ Y	SAMPLING METHOD	TEST NO.	96-HOUR -LC 50	pH	CONDUCTIV- TIVITY	COMMENTS
INCO								
- Copper Cliff (NE) (continued)	Final Effluent (to Kelly Lake)	08/30/77	grab	M1-77-82	N.L.	7.5	200	- unaerated - anomalous mortalities in 50%
		08/30/77	grab	M1-77-82	>100%	7.5	200	- 20% mortality in 100%
	North of Hwy #17(at bridge over Copper Cliff Creek)	05/25/76	grab	M1-76-1	18%	9.0	1700	- unaerated
		06/21/76	grab	M1-76-8	<10%	10.4	2400	- unaerated - 10% killed all fish in 4 hrs.
		06/21/76	grab	M1-76-8	24%	10.4	2400	- unaerated - pH adjusted to 7.0 - LC50 range 18-32%
	Creek Effluent from Cu refinery	06/07/76	grab	M1-76-5	N.L.	9.5	550	- unaerated - pH adjusted to 5.9 - poor temp control after 24 hrs.
		06/07/76	grab	M1-76-5	N.L.	9.5	550	- unaerated
	3rd Lagoon Effluent	06/07/76	grab	M1-76-4	<10%	10.3	320	- unaerated - 10% killed all fish in 72 hrs.- poor temp. control after 24 hrs.
		06/07/76	grab	M1-76-4	<10%	10.3	325	- unaerated - 10% killed all fish in 48 hrs. pH adjusted to 6.6
- Coniston (NE)	Coniston Creek (at point where it enters Whanapatei R. downstream of INCO)	05/24/77	grab	M1-6-77	N.L.	7.8	350	- unaerated
	Coniston Creek at Hwy 17 (upstream of INCO)	05/24/77	grab	M1-5-77	N.L.	7.4	235	- unaerated

DATA SUMMARY SHEET

COMPANY NAME and LOCATION	EFFLUENT	SAMPLE DATE M/ D/ Y	SAMPLING METHOD	TEST NO.	96-HOUR -LC 50	pH	CONDUCTIVITY	COMMENTS
INCO								
- Levack (NE)	Tailings Pond	06/14/76	grab	M1-76-6	<10%	8.0	3300	- 10% killed all fish in 44 hrs.
		06/14/76	grab	M1-76-6	4.2%			- LC50 range 3.2-5.6%
- Garson Mine								
Nolin's Creek (NE)	Nolin Creek	07/14/77	grab	M2-77-37	25%	9.3	1800	- LC50 range 20-30% - unaerated
	(Treatment Plant effluent below pond)	07/14/77	grab	M2-77-37	<100%	9.3	1800	- 100% killed all fish in 0.5 hrs.
- Garson Mine								
Nolin's Creek (NE)	Garson Mine	07/14/77	grab	M1-77-38	100%	9.3	1200	- unaerated
(continued)	Effluent (at	07/14/77	grab	M1-77-38	N.L.	9.3	1200	
	(culvert by	08/30/77	grab	M1-77-81	<10%	4.1	1240	- unaerated
	old Hwy 144)	08/30/77	grab	M1-77-81	<100	4.1	1240	- 90% mortality in 10% - 100% killed all fish in 24 hrs.
- Shebandowan Mine								
(NW)	Shebandowan	07/25/77	grab	M1-77-48	N.L.	7.4	800	- unaerated
	Mine Effluent	07/25/77	grab	M1-77-48	N.L.	7.4	800	
		07/21/80	grab comp.	M3-80-17	>100%	8.4	1000	- 10% mortality in 100%
INDUSTRIAL GRAIN								
PRODUCTS								
- Thunder Bay (NW)	Final Effluent	08/08/77	grab	M1-77-60	<10%	3.5	880	- unaerated
	(Wheat Starch	08/08/77	grab	M1-77-60	<100%	3.5	880	- unaerated
	Manufacturer)	08/08/77	grab	M1-77-60	<100%	3.5	880	- pH adjusted to 6.4 - 100% - 100% killed all fish in 24 hrs. - 100% killed all fish in 0.5 hrs.

DATA SUMMARY SHEET

COMPANY NAME and LOCATION	EFFLUENT	SAMPLE DATE M/ D/ Y	SAMPLING METHOD	TEST NO.	96-HOUR -LC 50	pH	CONDUCTIV- TIVITY	COMMENTS
INDUSTRIAL GRAIN PRODUCTS - Thunder Bay (NW)		08/19/80	4hr grab comp.	M3-80-58	0.7%	3.9		
INGERSOLL STP - Ingersoll (SW)	Final Effluent (before chlorination)	12/12/79 04/10/80	grab grab	79-194 80-48	N.L.* N.L.	7.9	925	- 24 hr test
	Final Effluent (after chlorination)	04/12/80	grab	80-49	43%			
IROQUOIS MUNICIPAL DISCHARGE - Iroquois (SE)	Municipal Discharge	08/10/77	grab	M2-77-90	38%	7.1	1400	- LC50 range 30-50%
ITEA TEXTILES - Cornwall (SE)	Dye Separator Effluent	02/19/79 02/19/79 03/05/79 03/05/79 04/23/79	grab grab grab grab grab	79-6 79-6 79-7 79-7 79-18	15% 15% N.L.* N.L.* 25%	6.0 6.0 6.4 6.4 6.4	390 390 330 330 325	- pH adjusted to 7.8 - * at 40% - pH adjusted to 7.6-* at 40%
KAMKOTIA MINE - Timmins (NE)	Mine Outfall	08/06/76 08/06/76 05/16/78 05/16/78	grab grab grab grab	M1-76-20 M1-76-20 78-26 78-26	62% <10% 23% N.L.	2.4 2.4 3.0 3.0	3300 3300 930 930	- pH adjusted to 7.2 unaerated - 10% killed all fish in 3 hrs. - unaerated - pH adjusted to 7.5

DATA SUMMARY SHEET

COMPANY NAME and LOCATION	EFFLUENT	SAMPLE DATE M/ D/ Y	SAMPLING METHOD	TEST NO.	96-HOUR -LC 50	pH	CONDUCTIVITY	COMMENTS
KANICHEE MINE Temagani (NE)	Tailings Pond	08/23/77	grab	M1-77-77	>100%	7.7	920	- 20% mortality in 100% unaerated
		08/23/77	grab	M1-77-77	N.L.	7.7	920	
KERR-ADDISON MINE - Virginiatown (NE)	Tailings Pond Decant	10/29/80	grab	80-204	29%			
KIMBERLY-CLARK OF CANADA - Huntsville (C)	Polishing Lagoons	05/05/80	grab	80-61	93%	7.5	540	
- St. Catharines (WC) Final Effluent		05/17/76	grab	76-66	N.L.	7.8	300	- unaerated
		05/17/76	grab	76-66	58%	7.8	300	
		02/28/77	grab	77-14	N.L.	7.1	320	
		04/23/80	grab	80-55	N.L.	7.3	293	
- Terrace Bay (NW)	Pulp Mill Effluent	08/09/77	grab	M1-77-59	39%	7.1	1250	- LC50 range 30-50%
	Culvert at Hwy. 17	07/30/80	2.5hr grab comp.	M3-80-28	47%	6.2	1450	
		08/05/80	4hr grab comp.	M3-80-36	37%	4.1	1300	
		08/12/80	24hr grab comp.	M3-80-48	30%	6.1	1500	
		08/19/80	24hr grab comp.	M3-80-52	35%	4.2		

DATA SUMMARY SHEET

COMPANY NAME and LOCATION	EFFLUENT	SAMPLE DATE M/ D/ Y	SAMPLING METHOD	TEST NO.	96-HOUR -LC 50	pH	CONDUCTIVITY	COMMENTS
KIMBERLY-CLARK OF CANADA - Terrace Bay (NW)	Discharges to Lake	08/05/80	grab	M3-80-37	22%	6.8	1300	
		08/11/80	grab	M3-80-49	30%	6.4	1200	
		08/19/80	grab	M3-80-53	<20%	6.1		
KRAFT FOODS Ingleside (SE)	Final Effluent	06/21/76	grab	76-110	35%	8.2	2250	- unaerated
		06/21/76	grab	76-110	27%	8.2	2250	
		06/23/76	8hr comp.	M2-76-14	40%	8.3	2475	
		06/24/76	8hr comp.	M2-76-15	38%	8.3	2600	
		06/24/76	8hr comp.	M2-76-15	24%	8.5	2500	- LC50 range 18-32%
		09/14/76	8hr comp. of grabs	M2-76-64	72%	7.65	165	- unaerated
		09/15/76	"	M2-76-65	>75%			- unaerated
		09/16/76	"	M2-76-66	70%			- unaerated
		12/07/76	"	76-200	38%*	7.9	2300	- * 48 hr LC50
		12/08/76	"	76-201	70%*	7.9	2500	- * 72 hr LC50
		12/09/76	"	76-202	38%*	7.8	2400	- * 72 hr LC50
		02/21/77	grab	77-10	70%	7.7	2050	- unaerated
		07/12/77	grab	77-55	N.L.	7.3	395	LC50 range 50-100%
	Lagoon prior to chlorination	07/12/77	grab	M2-77-52	17%	8.1	2950	
		07/12/77	grab	M2-77-52	25%	8.1	2950	- unaerated
		09/05/77	grab	M2-77-116	34%			LC50 range 20-30%
		09/05/77	grab	M2-77-116	56%			- unaerated
		05/17/78	grab	M2-78-15	47%	8.2	2450	- unaerated
		05/17/78	grab	M2-78-15	37%	8.2	2450	
		05/17/78	grab	M2-78-15	23%	8.2	2450	- unaerated
		05/17/78	grab	M2-78-15	59%	8.2	2450	
		05/17/78	grab	M2-78-15	<100%	8.2	2450	- unaerated - 100% killed
		05/17/78	grab	M2-78-15	<100%	8.2	2450	all fish in 24 hrs.
								- 100% killed all fish in 24 hrs.

DATA SUMMARY SHEET

COMPANY NAME and LOCATION	EFFLUENT	SAMPLE DATE M/ D/ Y	SAMPLING METHOD	TEST NO.	96-HOUR -LC 50	pH	CONDUCTIVITY	COMMENTS
KRAFT FOODS - Ingleside (SE) (continued)	Lagoon prior to chlorin- ation (cont'd)	10/17/78	grab	M2-78-283	<20%	8.1	2400	- 20% killed all fish in 72 hrs. - unaerated
		10/17/78	grab	M2-78-283	24.5%	8.1	2400	- LC50 range 20-30%
		10/17/78	grab	M2-78-283	32%	8.1	2400	- Treatment I
		10/17/78	grab	M2-78-283	24.5%	8.1	2400	- LC50 range 20-30%
		10/17/78	grab	M2-78-283	33%	8.1	2400	- unaerated
		10/17/78	grab	M2-78-283	N.L.	8.1	2400	- Treatment II
	Plant Outfall to lagoon	09/15/77	grab	M2-77-115	30%	5.0	700	- unaerated - LC50 range 1-5%
		09/15/77	grab	M2-77-115	2.2%	5.0	700	
	Cooling Water Outfall	07/12/77	grab	M2-77-54	N.L.	6.8	205	
	Lagoon after chlorination	07/12/77	grab	M2-77-53	16%	7.9	3000	
LACOURS LUMBER - Lakstock (NE)	Impound Area	09/08/76	grab	M1-76-32	<10%	7.1	780	- 10% killed all fish in 72 hrs. - unaerated
		09/08/76	grab	M1-76-32	70%	7.1	780	
LADNEY PROPERTIES - Sarnia (SW)	Pond	04/18/80	grab	80-53	N.L.	6.7	492	
LINDSAY SEWAGE TREATMENT PLANT - Lindsay (C)	South Outfall	03/06/78	grab	78-7	52%	6.9	1600	
		03/06/78	grab	78-7	66%	7.5	1100	
LUSTER DIVISION NATIONAL HARDWARE SPECIALITIES LTD. - Wallaceburg (SW)	Final Effluent	07/07/75	grab		>100%			- 40% mortality at 100%

DATA SUMMARY SHEET

COMPANY NAME and LOCATION	EFFLUENT	SAMPLE DATE M/ D/ Y	SAMPLING METHOD	TEST NO.	96-HOUR -LC 50	pH	CONDUCTIVITY	COMMENTS
MADAWASKA MINES - Bancroft (SE)	Final Ditch	09/19/77	grab	M2-77-118	N.L.	7.7	3750	
MONSANTO - Sarnia (SW)	ABS Plant	10/25/76	grab	76-187	<10%	7.2	2600	- 10% killed all fish in 48 hrs. - unaerated
		10/25/76	grab	76-187	<10%	7.2	2600	- "
NESTLES - Chesterville (SE)	Lagoon Discharge	07/23/76	grab	M2-76-30	42%	7.6	700	- unaerated
		07/23/76	grab	M2-76-30	N.L.*	7.6	700	- * at 56%
		08/27/76	grab	M2-76-47	N.L.*	7.55	690	- * 24 hr unaerated
		07/13/77	grab	M2-77-57	N.L.	7.5	920	
NORANDA MINES - Manitowadge (NW)	Final Effluent	09/13/77	grab	M1-77-89	39%*	8.8	3000	- unaerated * 24hr LC50
		09/13/77	grab	M1-77-89	<100%	8.8	3000	- 100% killed all fish in 2 hrs.
NORTHERN WOOD PRESERVERS - Thunder Bay (NW)	Final Effluent	08/08/77	grab	M1-77-58	N.L.	6.7	290	- unaerated
		08/08/77	grab	M1-77-58	N.L.	6.7	290	
ONTARIO PAPER COMPANY LTD. - Thorold (WC)	Copeland Condensates (inplant sample)	08/13/79	grab	79-113	62%	6.6	180	
	Groundwood White Water (inplant sample)	08/13/79	grab	79-112	24%	4.7	1350	- LC50 range 18-32%

DATA SUMMARY SHEET

COMPANY NAME and LOCATION	EFFLUENT	SAMPLE DATE M/ D/ Y	SAMPLING METHOD	TEST NO.	96-HOUR -LC 50	pH	CONDUCTIVITY	COMMENTS
ONTARIO PAPER COMPANY LTD. - Thorold (WC) (continued)	Na Sulfite white water (inplant sample)	08/13/79	grab	79-110	32%	5.8	710	- LC50 range 18-56%
	Receiving Water (Intake)	01/04/79	grab	79-2	N.L.*	7.4	290	- 24hr LC50 at 100%
		08/13/79	grab	79-110	N.L.	8.2	265	
	Final Effluent	05/17/76	grab	76-68	24%	7.9	1125	- LC50 range 18-32% - unaerated
		05/17/77	grab	76-68	76%	7.9	1125	
		02/28/77	grab	77-11	N.L.	7.2	1020	- 100% killed all fish in 24 hrs.
		01/04/79	grab	79-1	<100%	7.0	1700	
		08/13/79	grab	79-114	N.L.	6.8	345	
PAMOUR MINE - Timmins (NE)	Tailings Pond Decant	10/28/80	grab	80-201	24%	7.9	530	
PARIS MUNICIPAL TREATMENT PLANT - Paris (WC)	Influent	11/01/76	grab	76-191	1.8%	8.0	990	- LC50 range 1-3% - unaerated
		04/12/77	grab	77-44	14%	9.0	2700	- LC50 range 10-20%
	Effluent	11/01/76	grab	76-192	8%	7.7	1190	- unaerated
		04/12/77	grab	77-45	24%	7.6	2000	
PENMAN'S TEXTILES - Paris (WC)	Final Effluent	11/01/76	grab	76-190	<1.0%	7.1	1230	- 1% killed all fish in 96 hrs.

DATA SUMMARY SHEET

COMPANY NAME and LOCATION	EFFLUENT	SAMPLE DATE M/ D/ Y	SAMPLING METHOD	TEST NO.	96-HOUR -LC 50	pH	CONDUCTIVITY	COMMENTS
PETROSAR - Sarnia (SW)	Final Effluent	07/31/79	grab	M2-79-24	N.L.	7.3	2725	
		07/10/80	grab	M2-80-5	N.L.			
		07/12/80	grab	M2-80-6	N.L.			
		07/15/80	grab	M2-80-7	N.L.			
		09/11/80	grab	M2-80-14	N.L.			
P.L. ROBERTSON - Milton (C)	Final Effluent	09/02/75	grab		N.L.			
POLYSAR - Sarnia (SW)	66" Main Sewer	04/13/76	grab	76-47	75%	7.5	480	- LC50 range 50-100%
		06/14/76	grab	76-91	32%	7.6	540	
		06/14/76	grab	76-91	<100%	7.6	540	- 100% killed all fish in 24 hrs-stored tightly covered at 4°C
		06/14/76	grab	76-91	<100%	7.6	540	- 100% killed all fish in 24 hrs-stored uncovered at 4°C
		06/14/76	grab	76-91	<100%	7.6	540	- 100% killed all fish in 1.5 hrs - stored tightly covered at 15°C
		06/14/76	grab	76-91	<100%	7.6	540	- 100% killed all fish in 24 hrs - stored uncovered at 15°C
		07/26/76	grab	76-149	>100%	7.6	550	- unaerated - 10% mortality at 100%
		07/26/76	grab	76-151	N.L.	7.6	550	
		07/26/76	grab	76-149	N.L.	7.6	550	- under an O ₂ atmosphere
		07/26/76	grab		>100%	7.6	550	- continuous flow 25% mortality at 100%
		08/23/76	grab	76-153	40%	7.6	890	- unaerated
		08/22/76	grab	76-153	35%	7.7	680	- unaerated
		08/22/76	grab	76-153	59%	7.7		

DATA SUMMARY SHEET

COMPANY NAME and LOCATION	EFFLUENT	SAMPLE DATE M/ D/ Y	SAMPLING METHOD	TEST NO.	96-HOUR -LC 50	pH	CONDUCTIVITY	COMMENTS
POLYSAR - Sarnia (SW) (continued)		08/22/76	grab	76-153	43.5%	7.7	680	- unaerated - O ₂ head treated
		06/27/79	grab	M2-79-5	N.L.	8.4	620	
		08/01/79	grab	M2-79-26	N.L.	8.0	612	
		08/16/79	grab	M2079-35	N.L.	7.9	695	
	Stereo API Separator	03/02/76	grab	76-11	8.4%			
		06/14/76	grab	76-90	7.6%			
		06/14/76	grab	76-90	<3.2%	7.2	155	- 90% mortality at 3.2%
		07/26/76	grab	76-150	16%	7.35	160	
		07/26/76	grab	76-150	11%	7.35	160	- unaerated
		08/23/76	grab	76-154	<100%	7.7	180	- 90% mortality at 100%
		06/27/79	grab	M2-79-4	28%	7.3	191	
		08/01/79	grab	M2-79-30	33%	7.7	210	
		08/16/79	grab	M2-79-38	45%	7.9	200	
		03/05/80	grab	80-35	7.1%	7.7	160	
		09/25/80	grab	80-175	>100%			- 30% mortality in 100%
		09/25/80	grab	M2-80-17	63%			
	Esso/Polysar boundary (St. Clair River)	06/14/76	grab	76-93	N.L.	8.35	175	
	72" Sewer	06/14/76	grab	76-92	N.L.	7.45	205	
	Hwy 40 Ditch (end)	06/14/76	grab	76-88	>100%	8.35	200	- 10% mortality at 100%
	54" Sewer	04/13/76	grab	76-48	N.L.	7.9	210	
		06/14/76	grab	76-89	>100%	7.85	230	- 10% mortality in 100%

DATA SUMMARY SHEET

COMPANY NAME and LOCATION	EFFLUENT	SAMPLE DATE M/ D/ Y	SAMPLING METHOD	TEST NO.	96-HOUR -LC 50	pH	CONDUCTIVITY	COMMENTS
POLYSAR - Sarnia (SW) (continued)	Service Water	07/14/76	grab	76-94	N.L.	8.1	180	
		07/26/76	grab	76-148	>100%	7.6	550	- 10% mortality in 100%
		07/27/76	grab	76-148	>100%			- 10% mortality in 100% unaerated
		08/22/76	grab	76-153	N.L.	7.6	180	- unaerated
		11/01/76	grab	76-188	N.L.	7.9	200	
		11/01/76	grab	78-189	N.L.	7.8	200	- unaerated
	Styrene II plant effluent after treatment	08/16/79	grab	M2-79-39	2.3%	9.2	430	
	Boat Water	09/25/80	grab	M2-80-15	13%			- 10:1 dilution at start
		09/25/80	grab	M2-80-16	>100%			- air stripped site
REICHOLD CHEMICAL - Thunder Bay (NW)	Final Effluent	08/02/77	grab	M1-77-56	<10%	7.9	1500	- unaerated - 10% killed all fish in 20 hrs.
		08/02/77	grab	M1-77-56	<100%	7.9	1500	- 100% killed all fish in 4 hrs.
		09/07/77	grab	M1-77-83	N.L.	8.0	860	- unaerated
		09/07/77	grab	M1-77-83	N.L.	8.0	860	- unaerated
		07/30/80	4hr grab comp.	M3-80-26	19%	7.6	1550	
RIO ALGOM MINES MILLIKEN-STANLEIGH MINES								
- Crotch Lake (NE)	Effluent from Crotch Lake Plant (CL-02)	06/20/79	grab	79-49	N.L.	13.3	5600	- unaerated - pH adjusted to 7.8
		06/20/79	grab	79-49	7.5%	13.3	5600	- unaerated

DATA SUMMARY SHEET

COMPANY NAME and LOCATION	EFFLUENT	SAMPLE DATE M/ D/ Y	SAMPLING METHOD	TEST NO.	96-HOUR -LC 50	pH	CONDUCTIVITY	COMMENTS
RIO ALGOM MINES MILLIKEN-STANLEIGH MINES - Crotch Lake (NE) (continued)	Feed to Crotch Lake Treat- ment Plant (CL-01)	06/20/79	grab	79-48	N.L.	2.1	1400	- unaerated - pH adjusted to 7.9
	Crotch Lake	08/23/76	grab	M1-76-25	N.L.	7.3	330	- unaerated
	Outlet	06/20/77	grab	M1-77-24	N.L.	7.1	260	
	(CL-04)	06/20/77	grab	M1-77-24	N.L.	7.1	260	- unaerated
		06/19/79	grab	79-50	N.L.	7.6	295	- unaerated
		08/22/79	grab	79-125	N.L.	7.6	280	- unaerated
RIO ALGOM MINES NORDIC PROPERTY - Elliot Lake (NE)	Serpent R. at Hwy 17	08/22/79	grab	79-136	N.L.	7.2	165	- unaerated
	North Nordic	06/19/79	grab	79-53	N.L.	8.2	1220	- unaerated
	Lake Effluent	08/22/79	grab	79-127	N.L.	7.3	1310	- unaerated
	(N-19)							
	Effluent from	06/19/79	grab	79-52	46%	12.4	2500	- unaerated LC50 range 30-70% pH adjusted to 7.8
	Nordic Treat- ment Plant	06/19/79	grab	79-52	24%	12.4	2500	- unaerated LC50 range 20-30%
	(N-18)	08/22/79	grab	79-126	26.3%	11.7	2150	
		08/22/79	grab	79-126	<100%	11.7	2150	- unaerated pH adjusted to 8.2

DATA SUMMARY SHEET

COMPANY NAME and LOCATION	EFFLUENT	SAMPLE DATE M/ D/ Y	SAMPLING METHOD	TEST NO.	96-HOUR -LC 50	pH	CONDUCTIV- TIVITY	COMMENTS
RIO ALGOM MINES NORDIC PROPERTY - Elliot Lake (NE)	Feed to Nordic Treatment Plant (N-17)	06/19/79	grab	79-51	N.L.	2.1	2000	- pH adjusted to 7.6 unaerated
	Buckles Creek at Hwy 108	08/30/76	grab	M1-76-27	>100%	6.0	920	- unaerated - 30% mortality in 100%
		07/11/77	grab	M1-77-33	N.L.	6.9	1050	- unaerated
		07/11/77	grab	M1-77-33	N.L.	6.9	1050	
RIO ALGOMA MINES PANEL MINE - Elliot Lake (NE)	Strike Lake Effluent	09/07/76	grab	M1-76-29	20%	3.9	430	- unaerated
		09/07/76	grab	M1-76-29	>100%	3.9	430	- unaerated pH adjusted to 7.0 10% mortality in 100%
		06/20/77	grab	M1-77-25	>100%	4.5	425	- unaerated 30% mortality in 100% pH adjusted to 7
		06/20/77	grab	M1-77-25	<100%	4.5	425	- 100% killed all fish in 33 hrs.
		08/20/80	grab	80-139	>100%	8.9	1700	- 40% mortality in 100%
RIO ALGOM MINES PRONTO PROPERTY - Elliot Lake (NE)	Pronto Effl. at Hwy 17 (PR-01)	08/16/76	grab	M1-76-23	N.L.	6.5	470	
		07/11/77	grab	M1-77-32	N.L.	6.9	560	- unaerated
		07/11/77	grab	M1-77-32	N.L.	6.9	560	
		06/21/79	grab	79-54	N.L.	6.4	660	- unaerated
		08/22/79	grab	79-128	N.L.	7.0	405	- unaerated

DATA SUMMARY SHEET

COMPANY NAME and LOCATION	EFFLUENT	SAMPLE DATE M/ D/ Y	SAMPLING METHOD	TEST NO.	96-HOUR -LC 50	pH	CONDUCT- TIVITY	COMMENTS
RIO ALGOM MINES PRONTO PROPERTY - Elliot Lake (NE) (continued)	Treated Effl. leaving Treat- ment Plant (PR-03)	06/19/79	grab	79-56	N.L.	12.1	1340	- pH adjusted to 7.8 unaerated
		06/19/79	grab	79-56	N.L.*	12.1	1340	- unaerated * at 30%
		06/19/77	grab	79-56	N.L.*	12.1	1340	- unaerated * at 50%
	Treated Effl. O/F settling area (PR-04)	06/19/79	grab	79-57	N.L.	11.5	840	- unaerated pH adjusted to 7.8
	Feed to Pronto Treatment Plant (PR-02)	06/19/79	grab	79-55	N.L.	2.2	980	- pH adjusted to 7.8 unaerated
RIO ALGOM MINES QUIRKE PROPERTY - Elliot Lake (NE)	Dunlop Lake at Pumphouse (Q-19)	06/20/79	grab	79-62	N.L.	7.6	35	- unaerated
		08/22/79	grab	79-135	N.L.	7.9	38	- unaerated
	Quirke Mine (Q-05)	08/22/79	grab	79-129	17%	9.8	2050	- unaerated LC50 range 10-30%
		08/22/79	grab	79-129	N.L.	9.8	2050	- unaerated Dowex resin treated for removal of ammonia
		08/22/79	grab	79-129	<100%	9.8	2050	- unaerated pH adjusted to 8.5 - 100% killed all fish in 24 hrs.
	Serpent River at Rio Algom railroad	06/20/79	grab	79-63	N.L.	8.6	580	- unaerated

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COMPANY NAME and LOCATION	EFFLUENT	SAMPLE DATE M/ D/ Y	SAMPLING METHOD	TEST NO.	96-HOUR -LC 50	pH	CONDUCTIVITY	COMMENTS
RIO ALGOM MINES QUIRKE PROPERTY - Elliot Lake (NE) (continued)	Serpent River below effluent addition, at flow station (Q-09)	06/20/79	grab	79-61	N.L.	8.5	720	- unaerated
		08/22/79	grab	79-134	N.L.	7.0	1040	- unaerated
	Serpent River above effluent addition, at Mine Rd. (Q-08)	06/20/79	grab	79-60	N.L.	8.0	305	- unaerated
		08/22/79	grab	79-153	N.L.	7.6	2000	- unaerated
	Tailings Effluent to Serpent River at Hwy 108 (Q-06)	06/20/79	grab	79-59	N.L.	10.3		- unaerated pH adjusted to 7.6
		06/20/79	grab	79-59	N.L.*	10.3		- unaerated * at 30%
		06/20/79	grab	79-59	>70%	10.3		- unaerated
		08/22/79	grab	79-132	N.L.	7.0	2000	- unaerated
	Tailings Effluent after treat- ment (Q-3)	07/11/77	grab	M1-77-31	>100%*	7.7	2400	- unaerated * 24 hr LC50 20% mortality in 100%
		07/11/77	grab	M1-77-31	100%	7.7	2400	
		06/20/79	grab	79-58	<100%	11.4	2200	- unaerated pH adjusted to 7.8 100% killed all fish in 48 hrs.
		06/20/79	grab	79-58	N.L.*	11.4	2200	- unaerated * at 50%
	Dam Effluent at Quirke	08/22/79	grab	79-131	N.L.	7.6	2400	- unaerated
		08/30/76	grab	M1-76-26	<10%	7.0	2200	- 80% mortality in 10% unaerated
		06/10/80	grab	80-91	48%	8.5	2500	
		06/10/80	grab	80-92	N.L.	8.5	2750	- clinoptilolite treated
		08/20/80	grab	80-138	59%	8.3	2600	

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COMPANY NAME and LOCATION	EFFLUENT	SAMPLE DATE M/ D/ Y	SAMPLING METHOD	TEST NO.	96-HOUR -LC 50	pH	CONDUCTIVITY	COMMENTS
ROHM & HAAS - Norrisberg (SE)	Cooling Water	07/12/77	grab	M2-77-51	N.L.	7.2	310	
SCHUMACHER MINE - Timmins (NE)	Tailings Pond Decant	10/28/80	grab	80-203	<20%	7.6	1750	
SCOTT ROAD DUMP - Sarnia	Outfall to Township Ditch	06/27/79	grab	M2-79-8	66%	9.34	271	- 30% mortality in 100%
		07/19/79	grab	M2-79-14	>100%	8.5	1200	
		07/26/79	grab	M2-79-20	N.L.	8.19	2180	
		08/01/79	grab	M2-79-29	N.L.	7.8	1780	
		09/25/80	grab	M2-80-18	N.L.			
SHELL CANADA - Corunna (SW)	Cooling Water	05/29/79	grab	79-20	N.L.*	8.1	490	- * 24 hr test
	Total Effl. (API separator, Biological oxidation and storm water combined according to flow)	07/12/76	3-gr comb.	76-132	N.L.	7.7	250	- unaerated
		05/29/79	"	79-22	N.L.*	8.0	340	- * 24 hr test
	Intake (Service Water)	07/12/76	grab	76-133	N.L.	8.3	205	- unaerated
		05/29/79	grab	79-21	N.L. *	8.4		- * 24 hr test at 100%

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COMPANY NAME and LOCATION	EFFLUENT	SAMPLE DATE M/ D/ Y	SAMPLING METHOD	TEST NO.	96-HOUR -LC 50	pH	CONDUCTIV- TIVITY	COMMENTS
SHELL CANADA - Oakville (WC) (continued)	Final holding pond	07/28/75 06/11/79 06/11/79	grab grab grab	79-46 79-46	N.L. N.L. N.L.*	7.8 7.7		- continuous flow - * 24 hr LC50
SHERMAN MINE - Temagami (NE)	1/4 mile below Weir on Tetapaga R.	06/29/76	grab	M1-76-10	N.L.	7.5	480	- unaerated
	South Pit	07/20/77	grab	M1-77-44	>100%	2.9	2500	- pH adjusted to 6.3 30% mortality in 100%
		07/20/77	grab	M1-77-44	<100%	2.9	2500	- 100% killed 11 fish in 1.5 hrs.
	Mine Effluent	09/20/76	grab	M1-76-42	N.L.	8.3	580	- unaerated
SKYWAY SEWAGE TREATMENT PLANT - Burlington (C)	Before Chlorination	10/04/76	grab	76-167	>100%	7.9	740	- 10% mortality in 100%
SPRUCE FALLS POWER & PAPER CO. - Kapuskasing (NE)	Red liquor stream (inplant sample)	11/19/79	grab	79-172	1.0%	3.1	2750	
	Condensate stream (inplant sample)	11/09/79	grab	79-171	2.3%	1.8	5400	
	Magnefite stream (inplant sample)	11/19/79	grab	79-173	13%	2.65	1160	- LC50 range 9-18%

DATA SUMMARY SHEET

COMPANY NAME and LOCATION	EFFLUENT	SAMPLE DATE M/ D/ Y	SAMPLING METHOD	TEST NO.	96-HOUR -LC 50	pH	CONDUCTIVITY	COMMENTS
SPRUCE FALLS POWER & PAPER CO. - Kapuskasing (NE) (continued)	TMP chip washer (inplant sample)	07/15/78	grab	78-41	0.9%	5.0	160	- pH adjusted to 6.5
		07/15/78	grab	78-41	1.7%	5.0	160	
	TMP stock liquor (inplant sample)	07/15/78	grab	78-43	2.3%	6.2	70	
	Groundwood mill stock liquor (inplant sample)	05/19/77	grab	M1-77-2	14%	6.8	79	- LC50 range 10-20%
	Chip Washer water (inplant sample)	06/14/77	grab	M1-77-19	<2%	5.3	155	- 2% killed all fish in 12 hrs.
	4th Stage reject liquor (inplant sample)	06/14/77	grab	M1-77-18	<2%	5.4	160	- 2% killed all fish in 24 hrs.
		07/15/78	grab	78-42	3.6%	2.3	540	- pH adjusted
		07/15/78	grab	78-42	11.8%	2.3	540	
	Warmwater intake to TMP (inplant sample)	06/15/78	grab	M1-77-20	N.L.	7.5	108	
	Pulp Stock - no bleach (inplant sample)	06/15/77	grab	M1-77-21	2%	6.3	140	

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COMPANY NAME and LOCATION	EFFLUENT	SAMPLE DATE M/ D/ Y	SAMPLING METHOD	TEST NO.	96-HOUR -LC 50	pH	CONDUCTIVITY	COMMENTS
SPRUCE FALLS POWER & PAPER CO. - Kapuskasing (NE) (continued)	Pulp Stock - with bleach (inplant sample)	06/15/77	grab	M1-77-22	<2%	5.2	240	- 80% mortality in 2%
	Process Warm- water (inplant sample)	07/15/78	grab	78-40	>100%	7.9	85	- 10% mortality in 100%
	Main Mill Effluent	07/06/76	grab	M1-76-12	22%	6.3	1400	- unaerated
		07/06/76	grab	M1-76-12	42%	6.3	1400	- LC50 range 32-56%
		07/20/76	grab	M1-76-14	14%	3.8	510	- unaerated
		07/20/76	gran	M1-76-14	14%	3.8	510	- " "
		09/20/76	grab	M1-76-40	<10%	3.7	530	- unaerated
		09/20/76	grab	M1-76-40	<10%	3.7	530	- 30% mortality in 10% in 96 hrs.
	Groundwood whitewater overflow (inplant sample)	08/27/79	grab	79-147	24%	4.0	560	- LC50 range 17.5-32.5%
		11/19/79	grab	79-174	37%	6.0	486	
		05/19/77	grab	M1-1-77	N.L.	6.4	148	
		08/27/79	grab	79-148	47.7%	4.9	355	- CL50 range 32.5-70%
	TMP Final Effluent (inplant sample)	07/15/78	grab	78-44	3.2%	6.0	140	- LC50 range 2-5%
		08/27/79	grab	79-150	1.2%	5.0	415	
	Ca sulfite effluent (inplant sample)	08/27/79	1 gr. every 5 min over					
			1h 20 min	79-149	3.5%	2.2	4150	
		08/27/79	"	79-149	<10%	2.2	4150	- pH adjusted to 8.0

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COMPANY NAME and LOCATION	EFFLUENT	SAMPLE DATE M/ D/ Y	SAMPLING METHOD	TEST NO.	96-HOUR -LC 50	pH	CONDUCTIVITY	COMMENTS
SPRUCE FALLS POWER & PAPER CO. - Kapuskasing (NE)	Intake (Service Water)	08/27/79	grab	79-151	N.L.	7.7	110	
STELCO - Hamilton (WC)	West Side Open Cut Sewer	06/23/69	grab		3.9%			- unaerated red belly dace used
		08/25/75	grab		3.0%			- unaerated
		08/25/75	grab		2.4%			- unaerated
		09/09/75	grab		4.2%			- unaerated
		04/05/76	grab	76-42	2.2%	7.35	780	- unaerated
		06/06/77	grab	77-78	8.5%	7.7	470	
		01/12/78	grab	78-2	1.4%	7.5	720	- continuous flow bioassay LC range 1-2%
		01/12/78	grab	78-2	0.7%	6.6	750	
		01/12/78	grab	78-2	1.1%	7.5	720	
		03/13/78	grab	78-13	3.8%	8.2	560	
		05/24/78	24hr comp.	M2-78-17	7.0%	7.32	518	
		05/25/78	24hr comp.	M2-78-21	N.L.*	7.9	740	- * at 60%
		05/26/78	24hr comp.	M2-78-25	N.L.	8.0	640	
		05/30/78	24hr comp.	M2-78-29	N.L.	7.7	640	
		05/31/78	24hr comp.	M2-78-35	N.L.	7.65	630	
		06/01/78	24hr comp.	M2-78-39	N.L.	7.45	440	
		06/06/78	24hr comp.	M2-78-43	49%	7.6	550	- LC50 range 40-60%
		06/07/78	24hr comp.	M2-78-48	N.L.	7.25	600	
		06/08/78	24hr comp.	M2-78-53		7.7	600	
		06/13/78	24hr comp.	M2-78-58	35%	7.98	580	
		06/13/78	grab	M2-78-61	1.7%	7.5	560	
		06/14/78	24hr comp.	M2-78-64	17.2%	8.15	560	- LC50 range 10-30%
		06/13/78	grab	M2-78-61	1.4%	7.7	440	- LC50 range 1-2%
		06/13/78	grab	M2-78-97	N.L.*			- * at 10%
		06/13/78	grab	M2-78-98	N.L.*			- Effluent renewed every 48 hrs - * at 5%

DATA SUMMARY SHEET

COMPANY NAME and LOCATION	EFFLUENT	SAMPLE DATE M/ D/ Y	SAMPLING METHOD	TEST NO.	96-HOUR -LC 50	pH	CONDUCTIVITY	COMMENTS
STELCO - Hamilton (WC) (continued)		06/13/78	grab	M2-78-99	N.L.*			- Effluent renewed every 24 hrs - * at 10%
		06/13/78	grab	M2-78-61	2.2%			
	West Side	06/15/78	24hr comp.	M2-78-69	9.4%	8.05	660	
	Open Cut	06/16/78	24hr comp.	M2-78-73	N.L.	7.3	620	
	Sewer (con't)	06/17/78	24hr comp.	M2-78-75	N.L.	7.6	440	
		06/18/78	24hr comp.	M2-78-77	N.L.	7.35	610	
		06/19/78	24hr comp.	M2-78-81	N.L.	7.45	605	
		06/19/78	24hr comp.	M2-78-83	>100%	8.0	620	- 40% mortality in 100%
		06/20/78	24hr comp.	M2-78-85	N.L.	7.8	610	
		06/21/78	24hr comp.	M2-78-90	>100%	7.95	620	- 20% mortality in 100%
		06/22/78	24hr comp.	M2-78-94	N.L.	7.9	600	
		06/27/78	24hr comp.	M2-78-101	N.L.	8.1	660	
		06/28/78	24hr comp.	M2-78-108	N.L.	8.15	680	
		06/29/78	24hr comp.	M2-78-111	N.L.	8.35	660	
		07/05/78	24hr comp.	M2-78-120	N.L.	7.97	610	
		07/06/78	24hr comp.	M2-78-124	N.L.	8.37	650	
		07/07/78	24hr comp.	M2-78-127	N.L.	7.4	680	
		07/11/78	24hr comp.	M2-78-128	29%	7.65	560	
		07/12/78	24hr comp.	M2-78-143	N.L.	7.9	630	
		07/18/78	24hr comp.	M2-78-153	28%	6.85	640	- LC50 range 20-40%
		08/22/78	grab	M2-78-237	45%	7.5	620	- LC50 range 40-50%
		08/24/78	grab	M2-78-244	34.7%	8.0	580	- LC50 range 30-40%
		08/29/78	grab	M2-78-250	N.L.	8.0	540	
		08/31/78	grab	M2-78-257	>100%	7.6	500	- 10% mortality in 100%
		09/06/78	grab	M2-78-261	1.75%	8.7	690	- LC50 range 1-3%
		09/08/78	grab	M2-78-270	3.8%	7.2	540	- LC50 range 3-5%
		09/12/78	grab	M2-78-271	8.5%	7.5	520	- LC50 range 7-10%
		09/14/78	grab	M2-78-281	31%	7.3	600	
		01/12/78	grab	78-2	1.75%			- continuous flow LC50 range 1.25-2.5%
		01/12/78	grab	78-2	1.75%			- continuous flow LC50 range 1.25-2.5%

DATA SUMMARY SHEET

COMPANY NAME and LOCATION	EFFLUENT	SAMPLE DATE M/ D/ Y	SAMPLING METHOD	TEST NO.	96-HOUR -LC 50	pH	CONDUCTIVITY	COMMENTS
STELCO - Hamilton (WC) (continued)	West Side Open Cut Sewer (con't)	07/09/80	grab	80-107	2-5%	7.3	530	
		07/23/80	grab	80-110	12.3%			
	North West Outfall	05/30/78	24hr comp.	M2-78-32	3.7%	8.8	590	- LC50 range 3-5%
		05/31/78	24hr comp.	M2-78-36	17%	8.05	590	
		06/01/78	24hr comp.	M2-78-40	N.L.	7.45	405	
		06/03/78	24hr comp.	M2-78-45	N.L.	7.4	550	
		06/07/78	24hr comp.	M2-78-50	N.L.	7.5	540	
		06/08/78	24hr comp.	M2-78-55	<75%	8.4	610	- 75% killed all fish in 24 hrs
		06/13/78	24hr comp.	M2-78-60	N.L.	7.4	530	
		06/14/78	24hr comp.	M2-78-66	N.L.	7.6	500	
		06/15/78	24hr comp.	M2-78-71	72%	8.4	560	- LC50 range 50-100%
		06/17/78	24hr comp.	M2-78-76	N.L.	7.95	415	
		06/18/78	24hr comp.	M2-78-78	N.L.	8.25	600	
		06/19/78	24hr comp.	M2-78-82	N.L.	7.85	565	
		06/20/78	24hr comp.	M2-78-86	N.L.	7.7	580	
		06/22/78	24hr comp.	M2-78-95	N.L.	7.8	580	
		06/27/78	24hr comp.	M2-78-102	7.2%	9.1	640	- LC50 range 5-10%
		06/28/78	24hr comp.	M2-78-109	13.1%	8.7	600	
		06/29/78	24hr comp.	M2-78-112	32%	8.3	610	- LC50 range 20-50%
		07/05/78	24hr comp.	M2-78-121	78%	8.37	520	- LC50 range 60-100%
		07/06/78	24hr comp.	M2-78-125	0.88%	9.25	620	- LC50 range 0.75-1%
		07/07/78	24hr comp.	M2-78-128	17.4%	8.3	680	- range 5-10%
		07/11/78	24hr comp.	M2-78-132	7.7%	8.4	620	- LC50 range 5-10%
		07/12/78	24hr comp.	M2-78-142	14%	7.9	635	- LC50 range 10-20%
		07/13/78	24hr comp.	M2-78-147	<20%	7.4	615	- 20% killed all fish in 96 hrs.
		07/13/78	24hr comp.	M2-78-125	3.1%			- LC50 range 2-5%
		07/09/80	grab	80-108	N.L.	7.7	500	
		07/23/80	grab	80-109	87%	8.1	430	

DATA SUMMARY SHEET

COMPANY NAME and LOCATION	EFFLUENT	SAMPLE DATE M/ D/ Y	SAMPLING METHOD	TEST NO.	96-HOUR -LC 50	pH	CONDUCTIVITY	COMMENTS
STELCO - Hamilton (WC) (continued)	#2 Pumphouse	05/24/78	24hr comp.	M2-78-19	100%	8.1	510	
		05/25/78	24hr comp.	M2-78-23	N.L.	8.2	580	
		05/26/78	24hr comp.	M2-78-27	N.L.	8.4	570	
		05/30/78	24hr comp.	M2-78-31	N.L.	8.05	580	
		05/31/78	24hr comp.	M2-78-34	N.L.	8.15	525	
		06/01/78	24hr comp.	M2-78-38	N.L.	8.05	380	
		06/06/78	24hr comp.	M2-78-42	N.L.	7.9	520	
		06/07/78	24hr comp.	M2-78-47	N.L.	7.5	520	
		06/08/78	24hr comp.	M2-78-52	N.L.	8.0	510	
		06/13/78	24hr comp.	M2-78-57	N.L.	8.25	480	
		06/14/78	24hr comp.	M2-78-63	N.L.	8.2	565	
		06/15/78	24hr comp.	M2-78-68	N.L.	7.7	510	
		06/16/78	24hr comp.	M2-78-72	N.L.	8.25	500	
		06/17/78	24hr comp.	M2-78-74	N.L.	7.3	490	
		06/18/78	24hr comp.	M2-78-79	N.L.	7.55	520	
		06/19/78	24hr comp.	M2-78-80	N.L.	7.9	510	
		06/20/78	24hr comp.	M2-78-84	N.L.	8.5	540	
		06/21/78	24hr comp.	M2-78-89	N.L.	7.8	560	
		06/22/78	24hr comp.	M2-78-93	N.L.	7.6	540	
		07/11/78	24hr comp.	M2-78-130	N.L.	8.5	490	
		07/12/78	24hr comp.	M2-78-139	N.L.	7.5	540	
		07/13/78	24hr comp.	M2-78-145	N.L.	7.35	525	
		07/09/80	grab	80-106	N.L.	7.8	485	
		07/23/80	grab	80-112	N.L.	8.0	410	
STELCO - Hamilton (WC)	#3 Open Hearth	05/24/78	24hr comp.	M2-78-16	N.L.	8.4	540	
		05/25/78	24hr comp.	M2-78-20	N.L.	8.25	620	
		05/26/78	24hr comp.	M2-78-24	>100%	8.1	550	- 10% mortality in 100%
		05/30/78	grab	M2-78-28	N.L.	7.95	560	
		06/06/78	24hr comp.	M2-78-44	N.L.	7.6	510	
		06/07/78	24hr comp.	M2-78-49	N.L.	7.5	540	
		06/08/78	24hr comp.	M2-78-54	N.L.	7.5	500	
		06/13/78	24hr comp.	M2-78-59	N.L.	8.17	495	

DATA SUMMARY SHEET

COMPANY NAME and LOCATION	EFFLUENT	SAMPLE DATE M/ D/ Y	SAMPLING METHOD	TEST NO.	96-HOUR -LC 50	pH	CONDUCTIVITY	COMMENTS
STELCO - Hamilton (WC) (continued)		06/14/78	24hr comp.	M2-78-65	N.L.	8.45	475	
		06/15/78	24hr comp.	M2-78-70	N.L.	7.55	540	
		06/20/78	24hr comp.	M2-78-87	N.L.	7.2	540	
		06/21/78	24hr comp.	M2-78-92	N.L.	8.0	525	
		06/22/78	24hr comp.	M2-78-96	N.L.	7.6	540	
		06/27/78	24hr comp.	M2-78-103	N.L.	8.0	570	
		06/28/78	24hr comp.	M2-78-110	N.L.	8.1	560	
		06/29/78	24hr comp.	M2-78-113	N.L.	8.2	560	
		07/05/78	24hr comp.	M2-78-119	N.L.	8.05	540	
		07/06/78	24hr comp.	M2-78-123	N.L.	7.95	580	
		07/07/78	24hr comp.	M2-78-126	N.L.	7.4	500	
		07/11/78	24hr comp.	M2-78-131	N.L.	7.55	520	
		07/12/78	24hr comp.	M2-78-141	N.L.	7.25	510	
		07/13/78	24hr comp.	M2-78-146	N.L.	7.2	520	
	Rolling Mill Cooling Water	07/11/78	grab	M2-78-137	N.L.	8.5	550	
		07/17/78	grab	M2-78-148	N.L.	7.09	540	
	Filtration Outfall (East Side)	06/27/78	grab	M2-78-106	N.L.	7.75	560	
		07/11/78	grab	M2-78-135	N.L.	7.95	540	
		07/17/78	grab	M2-78-152	N.L.	7.05	520	
		07/18/78	grab	M2-78-157	N.L.	7.35	565	
		07/19/78	grab	M2-78-161	N.L.	6.9	525	
	#1 Pumphouse	05/24/78	24hr comp.	M2-78-18	N.L.	8.1	455	
		05/25/78	24hr comp.	M2-78-22	N.L.	8.45	605	
		06/25/78	24hr comp.	M2-78-26	N.L.	8.55	510	
		05/30/78	24hr comp.	M2-78-30	N.L.	8.45	580	
		05/31/78	24hr comp.	M2-78-33	N.L.	8.37	580	
		06/01/78	24hr comp.	M2-78-37	N.L.	8.15	370	
		06/06/78	24hr comp.	M2-78-41	N.L.	8.3	510	
		06/07/78	24hr comp.	M2-78-46	N.L.	8.1	510	
		06/08/78	24hr comp.	M2-78-51	N.L.	7.85	515	
		06/13/78	24hr comp.	M2-78-56	N.L.	7.9	500	

DATA SUMMARY SHEET

COMPANY NAME and LOCATION	EFFLUENT	SAMPLE DATE M/ D/ Y	SAMPLING METHOD	TEST NO.	96-HOUR -LC 50	pH	CONDUCTIVITY	COMMENTS
STELCO - Hamilton (WC) (continued)		06/14/78	24hr comp.	M2-78-62	N.L.	8.0	510	
		06/15/78	24hr comp.	M2-78-67	N.L.	8.15	515	
		06/20/78	grab	M2-78-88	N.L.	7.3	540	
		06/27/78	24hr comp.	M2-78-100	N.L.	8.45	560	
		06/29/78	24hr comp.	M2-78-114	N.L.	8.6	580	
		07/05/78	24hr comp.	M2-78-118	N.L.	7.9	550	
		07/07/78	24hr comp.	M2-78-122	N.L.	7.3	480	
		07/11/78	24hr comp.	M2-78-129	N.L.	8.75	505	
		07/12/78	24hr comp.	M2-78-138	N.L.	7.4	545	
		07/23/80	grab	80-111	N.L.	8.6	430	
	Combined Lagoon (East side lagoon, filter plant & Depew St. sewers)	06/28/78	grab	M2-78-104	N.L.	7.9	580	
		07/11/78	grab	M2-78-136	N.L.	7.9	520	
		07/17/78	grab	M2-78-150	N.L.	5.8	560	
		07/18/78	grab	M2-78-155	N.L.	7.4	570	
		07/19/78	grab	M2-78-159	N.L.	6.8	525	
	Depew Street Sewer	06/27/78	grab	M2-78-107	N.L.	7.05	620	
		07/11/78	grab	M2-78-133	N.L.	7.43	540	
		07/17/78	grab	M2-78-149	44%	2.4	1180	- LC50 range 40-50%
		07/18/78	grab	M2-78-154	62%	6.3	580	- LC50 range 40-100%
		07/19/78	grab	M2-78-158	N.L.	6.5	540	
	Filtration (East Side)	06/27/78	grab	M2-78-105	N.L.	8.3	560	
		07/11/78	grab	M2-78-134	N.L.	7.7	540	
		07/11/78	grab	M2-78-151	N.L.	6.75	550	
		07/18/78	grab	M2-78-156	N.L.	8.35	570	
		07/19/78	grab	M2-78-160	N.L.	6.9	525	
	Lagoon Discharge	04/05/78	grab	76-43	75%	7.6	450	- unaerated LC50 range 56-100%

DATA SUMMARY SHEET

COMPANY NAME and LOCATION	EFFLUENT	SAMPLE DATE M/ D/ Y	SAMPLING METHOD	TEST NO.	96-HOUR -LC 50	pH	CONDUCTIVITY	COMMENTS
STELCO - Hamilton (WC) (continued)	Intake (Service Water)	06/06/78	grab	77-83	N.L.	8.0	430	
	North Trunk Sewer	09/09/78	grab		56%			- unaerated LC50 range 32-100%
		05/10/76	grab	76-59	N.L.	7.3	500	- unaerated
		06/06/78	grab	77-77	N.L.	8.1	480	
	Coke Oven byproducts recovery area	06/06/77	grab	77-82	N.L.	8.1	430	
	East Side Lagoon	06/23/69	grab		N.L.			- red belly dace used unaerated
		08/25/75						- red bell dace used unaerated
		06/06/77	grab	77-76	N.L.	8.0	460	- filter building
		06/06/77	grab	77-75	N.L.	7.6	440	
	E Blast Furnace Thickener Overflow	grab	06/06/77	77-81	75.7%	7.6	740	
	Hot Strip Finishing Mill - black water	04/05/76	grab	76-44	62%	7.1	620	- unaerated
		05/10/76	grab	76-60	32%	11.4	915	- unaerated
		06/06/77	grab	77-80	N.L.	8.7		
	B,C, & D Blastfurnace Thickener	09/09/75	grab		1.3%			- unaerated
		04/05/76	grab	76-41	0.86%	7.1	650	- unaerated
		06/06/77	grab	77-79	4.2%	7.4	540	
		01/12/78	grab	78-1	5.6%	7.4	750	- LC50 range 1-10%
		01/12/78	grab	78-1	0.7%	7.7	700	- LC50 range 0.5-1%

DATA SUMMARY SHEET

COMPANY NAME and LOCATION	EFFLUENT	SAMPLE DATE M/ D/ Y	SAMPLING METHOD	TEST NO.	96-HOUR -LC 50	pH	CONDUCTIVITY	COMMENTS
STELCO - Hamilton (WC) (continued)		01/12/78	grab	78-1	>10%*	7.7	1745	- *48 hr test - 10% dead in 10%
		03/13/78	grab	78-12	0.7%	8.0	920	- OC50 range 0.5-1%
	West Side Open Cut -before once thru from blast furnace	07/23/80	grab	80-114	N.L.	8.0	470	
	Once thru water from blast furnace recirculating system sewer	07/23/80	grab	80-113	2.0%			
STELCO - Nanticoke (WC)	Final	08/10/80	grab	80-131	N.L.	8.3	600	
		08/18/80	grab	80-136	N.L.	8.6	850	
STRATHCONA PAPER CO. LTD. - Strathcona (SE)	Lagoon #9 (Discharge to Napane River)	06/07/76	grab	M2-76-4	45%	6.2	580	- unaerated
	Lagoon #7 (Discharge to Napane River)	06/07/76	grab	M2-76-5	22%	6.7	525	- unaerated
		09/13/76	grab	M2-76-37	24%	6.1	510	- unaerated
		07/06/77	grab	M2-77-47	N.L.	6.5	490	
		05/26/80	grab	80-79	<20%	5.7	510	- high H ₂ S concentration which has liberated quickly due to aeration
		05/26/80	grab	80-79	>10%	5.7	510	- 10% mortality in 100%

DATA SUMMARY SHEET

COMPANY NAME and LOCATION	EFFLUENT	SAMPLE DATE M/ D/ Y	SAMPLING METHOD	TEST NO.	96-HOUR -LC 50	pH	CONDUCTIVITY	COMMENTS
STRATHCONA PAPER CO. LTD.								
- Strathcona (SE) (continued)	Spray Field Runoff	07/12/76	grab	M2-76-23	90%	7.5	440	- unaerated
		05/30/77	grab	M2-77-5	N.L.	6.7	640	
		06/06/77	grab	M2-77-46	N.L.	6.4	620	
SUN OIL								
- Sarnia (SW)	Total Effluent	07/12/76	grab	76-123	N.L.	7.8	500	- unaerated
		05/29/79	grab	79-22	N.L. *	8.1	500	- * 24hr test
	Intake (Service Water)	07/12/76	grab	76-124	N.L.	8.3	420	- unaerated
		05/29/79	grab	79-24	N.L.*	8.4	425	- * 24hr test
TECK CORP.								
- Cart Lake (NE)	Outlet at Cart Lake	07/20/77	grab	M1-77-43	N.L.	7.3	335	- unaerated
		07/02/77	grab	M1-77-43	N.L.	7.3	335	
TEXACO								
- Nanticoke (WC)	Final Holding Pond	06/04/79	grab	79-43	N.L.*	8.9	4450	- *24 hr test
		06/04/79	grab	79-43	N.L.	8.9	4450	
TEXASGULF								
- Porcupine R. (NE)	Discharge to Porcupine River	08/09/76	grab	M1-76-21	N.L.	6.1	1200	- unaerated
TOWNSHIP DITCH								
	At Entry to Polipan Property	06/27/79	grab	M2-79-6	N.L.	8.0	310	
		08/01/79	grab	M2-79-27	N.L.	8.0	330	
		08/16/79	grab	M2-79-36	N.L.	8.1	260	
	Outfall to St. Clair River	06/27/79	grab	M2-79-7	N.L.	8.2	233	
		08/01/79	grab	M2-79-28	N.L.	7.9	580	
		08/16/79	grab	M2-79-37	N.L.	7.8	280	

DATA SUMMARY SHEET

COMPANY NAME and LOCATION	EFFLUENT	SAMPLE DATE M/ D/ Y	SAMPLING METHOD	TEST NO.	96-HOUR -LC 50	pH	CONDUCT- TIVITY	COMMENTS
TOWNSHIP DITCH (continued)	South of Railway Bridge	07/26/79	grab	M2-79-17	N.L.	8.3	1800	
TRANSPARENT CELLULOSE FILM (T.C.F.) - Cornwall (SE)	Sulfide Sewer (#1 Sewer)	08/10/76	grab	M2-76-37	26%	8.75	2000	- unaerated
		06/27/77	grab	M2-77-36	20%	9.6	1900	
		06/27/77	grab	M2-77-36	<15%	9.6	1900	- pH adjusted to 7.0 - 15% killed all fish in 1 hr.
		08/16/77	grab	M2-77-96	45%	8.9	1950	- LC50 range 40-50%
		08/16/77	grab	M2-77-96	23%	8.9	1950	- pH adjusted to 6.9
		11/29/77	grab	M2-77-123	45%	8.2	1250	
		04/24/79	grab	79-16	44.3%	9.2	2100	
	Acid Sewer (#3 Sewer)	08/06/76	grab	M2-76-48	4.2%	1.7	9300	- unaerated
		06/27/77	grab	M2-77-38	6.0%	1.3	12000	- LC50 range 5-7%
		06/27/77	grab	M2-77-38	>100%	1.3	12000	- 20% mortality in 100% pH adjusted to 7.0
		04/24/79	grab	79-15	1.3%	1.2	16000	- LC50 range 0.5-2%
		04/24/79	grab	79-15	8.9%	1.2	16000	- pH adjusted to 7.8
		09/23/80	24hr comp.	80-159	1.7%	1.8		
		09/23/80	24hr comp.	80-170	>100%	7.9	10,000	- pH adjusted
		10/01/80	15hr comp.	80-176	3.0%	1.7	15,100	
		10/01/80	15hr comp.	80-187	59%	7.6	10,000	- pH adjusted
	#2 Sewer	06/27/77	grab	M2-77-37	N.L.	7.9	1300	
		08/16/77	grab	M2-77-97	N.L.	7.9	1500	
	TCF Well	09/23/80	grab	80-168	N.L.	7.4	1900	
		10/01/80	grab	80-185	N.L.	7.6	1900	

DATA SUMMARY SHEET

COMPANY NAME and LOCATION	EFFLUENT	SAMPLE DATE M/ D/ Y	SAMPLING METHOD	TEST NO.	96-HOUR -LC 50	pH	CONDUCTIVITY	COMMENTS
UNION CARBIDE - Lindsay (C) (continued)		03/06/78	grab	78-5	74%	8.9	4950	- clin. treated
		04/14/78	grab	78-16	34%	8.3	5200	
		04/14/78	grab	78-16	N.L.	8.3	5200	- clin. treated
UNIROYAL - Elmira (WC)	Influent (Carbon Filter)	09/20/76	grab	76-159	6%	8.0	20000	- LC50 range 5-7%
		04/12/77	grab	77-40	3.9%	8.5	33000	- LC50 range 3-5%
	Effluent (Carbon Filter)	09/20/76	grab	76-160	45%	8.4	20000	- pH adjusted to 6.6 LC50 range 20-30%
		09/20/76	grab	76-161	24%	8.4	20000	
		04/12/77	grab	77-41	22%	8.7	31000	
WILLROY MINES - Kirkland Lake (NE)	Tailings Pond Decant	10/29/80	grab	80-205	N.L.	8.3	925	
WINDSOR BUMPER - Windsor (SW)	Final Effluent	08/18/75	grab		64%			
WINDSOR CHROME PLATING - Windsor (SW)	Final Effluent	08/18/75	grab	N.L.				
ZEPHYR TEXTILES - Almonte (SE)	Main Mill Outfall	09/07/77	grab	M2-77-114	15.5%	5.9	2800	
		06/21/77	grab	M2-77-34	13%	5.7	3350	
	Cooling Water	06/21/77	grab	M2-77-32	N.L.	8.1	165	

DATA SUMMARY SHEET

COMPANY NAME and LOCATION	EFFLUENT	SAMPLE DATE M/ D/ Y	SAMPLING METHOD	TEST NO.	96-HOUR -LC 50	pH	CONDUCTIVITY	COMMENTS
ZEPHYR TEXTILES - Almonte (SE)	Dye Vat Overflow	06/21/77	grab	M2-77-38	N.L.	8.2	165	
	Drainage Ditch	08/24/76	grab	M2-76-44	<10%	6.45	610	- 10% killed all fish 33 hrs.

RA
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